Programme Outline

Biomedical Science is concerned with understanding the causes, diagnosis and treatment of disease, and the B990 Biomedical Sciences degree programme at Queen Mary is a long-established and highly-successful programme that is accredited by the prestigious Institute of Biomedical Science (IBMS). This new programme variant (launched in September 2014) encompasses the first two years of the established B990 curriculum, but then offers the opportunity for specialisation in the final year, with emphasis on the study of the origin, diagnosis and treatment of cancer. The degree is jointly delivered by the School of Biological and Chemical Sciences (SBCS) and the Barts and The London School of Medicine and Dentistry (SMD). The B993 programme variant is not accredited by the IBMS.

During the first two years, students study topics such as human anatomy, physiology, biochemistry, molecular biology, genetics and pharmacology. The final year consists of a research-oriented project, a problem-based learning module considering clinical case histories and specialist courses on topics such as cancer biology, immunology, cellular biology and molecular approaches to personalised medicine.

The suite of Biomedical Sciences degree programmes offered by Queen Mary’s SBCS and SMD offer an excellent training for
students wishing to apply for admission to medicine and dentistry, and many of our Biomedical Science graduates go on to 4 year (GEP) and 5 year degrees at Barts and The London School of Medicine and Dentistry and other UK medical schools. For those seeking direct employment, the degree also provides excellent preparation for careers in a wide-range of medically-related fields, within academia, and in both the public-sector and private sectors.

**Aims of the Programme**

To provide students with:
- a broad undergraduate theory and practical training in modern biosciences including subject areas such as: gross human anatomy and microanatomy; human physiology; general and clinical microbiology; human biochemical, genetical and molecular biological sciences; biomedical science techniques.
- an in-depth appreciation of specific topics relevant to the origin, diagnosis and treatment of cancer, including subjects such as cancer biology, immunology, cellular biology and personalised medicine.

To address skills needs for:
- progression to medical and dental degree courses and professions allied to medicine.
- progression to training and employment in clinical biomedical science laboratories.
- academic and clinical research.
- employment in biotechnology, pharmaceutical and microbiology-based companies.
- graduate training programmes and employment in a range of sectors

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 society;
- provide a sound knowledge base in the fields studied and develop key transferable skills in the areas of communication, numeracy, information technology, leadership, 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?**

Students who successfully complete the programme will have knowledge and understanding of the topics outlined immediately below, as well as the skills and attributes described in the subsequent sections:

**Academic Content:**

| A1 | Knowledge and critique of a broad-range of topics in biomedical science including: cell biology, gross anatomy, pathology, human physiology, general microbiology, human molecular biology, human & medical genetics, biochemistry, human metabolism, immunology, pharmacology, endocrinology. |
| A2 | Knowledge and its application to the specialised areas of biomedical science including: cancer biology, immunology, cellular biology and personalised medicine. |
| A3 | Critical evaluation of the experimental techniques in the biomedical sciences |

**Disciplinary Skills - able to:**

| B1 | Apply biomedical knowledge and principles, together with problem solving skills, in a wide range of theoretical and practical situations. Understand the importance of biomedical sciences to laboratory and clinical diagnostics |
| B2 | Conduct practical work efficiently and with due regard for health and safety guidelines. |
| B3 | Use a wide range of laboratory and analytical equipment. |
Programme Title: Biomedical Sciences (Pharmacology)

<table>
<thead>
<tr>
<th>B4</th>
<th>Analyse and evaluate/interpret the results of controlled experiments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B5</td>
<td>Retrieve, filter and collate biomedical data from a variety of information sources.</td>
</tr>
<tr>
<td>B6</td>
<td>Prepare scientific/technical reports.</td>
</tr>
</tbody>
</table>

Attributes:

<table>
<thead>
<tr>
<th>C1</th>
<th>Communicate effectively by written and verbal means.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>Capacity for independent learning, and to work independently.</td>
</tr>
<tr>
<td>C3</td>
<td>Able to participate constructively as a member of a group/team, with skills to influence, negotiate and lead.</td>
</tr>
<tr>
<td>C4</td>
<td>Evaluate the relevance, importance and reliability of the ideas of others and of different sources of information.</td>
</tr>
<tr>
<td>C5</td>
<td>Competence in the use of computer-based technology, and in the manipulation and analysis of quantitative data.</td>
</tr>
<tr>
<td>C6</td>
<td>Critical awareness of the role and impact of science in society, including the global perspective.</td>
</tr>
<tr>
<td>C7</td>
<td>Use information for evidence-based decision-making and creative thinking.</td>
</tr>
</tbody>
</table>

How Will You Learn?

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

Academic Content
The programme includes scheduled lectures, practical classes, workshops, seminars, tutorials and practical demonstrations. Students are also expected to use independent and self-directed learning to consolidate the lecture material, for completion of coursework and in-preparation for follow-on sessions. Support for learning is provided through the Library, Queen Mary's online learning environment (QMplus) and the facilities of the QMUL Student PC Service.

Practical and Problem-oriented Disciplinary Skills
Practical skills will be taught as part of organised practical classes, during the early stages of the programme. Workshops reinforce knowledge acquired in lectures and provide opportunities for application of such knowledge to the solution of real problems. Advanced practical skills and specialised analytical skills are then developed during the project component of the third year. The third year also includes project work and a self-directed, problem-based, learning module founded on clinical case histories.

Graduate Attributes
Queen Mary's graduate attributes are developed in a progressive fashion, but most notably in tutorial-based components. The project module provides further opportunities for the development of transferable skills and other aspects of these attributes.

How Will You Be Assessed?

Assessment of knowledge is through a combination of unseen written examinations and assessed coursework. 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 assessed oral examinations, oral presentations and extended reports/dissertations. 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.
Programme Title: Biomedical Sciences (Pharmacology)

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, report-writing skills and presentational skills.

Practical skills are assessed through in-class observation and through written laboratory reports, which often include attention to quantitative accuracy. The assessment of the final year practical research project also addresses the majority of the professional disciplinary skills that students of this programme are expected to acquire.

How is the Programme Structured?

Students follow a prescribed diet of modules during the first two years, so as to ensure they have a solid foundation in all the key areas of biomedical science. Details of the modules offered are described in the Programme Specification for B990.

In the third-year there is opportunity for some specialisation. Students may elect to continue and complete their studies on this IBMS-accredited degree programme in biomedical sciences, or may apply for transfer to one of several parallel degree programmes, which offer greater specialization in areas such as cancer, immunology, pharmacology and molecular medicine.

Transfer from the B990 programme to the B993 programme at the end of the second year is subject to successful application, which includes consideration of prior academic record. The availability of these other B99x programmes is not guaranteed and is subject to both minimum and maximum limitations on student registration in any given academic year. Graduates who transfer from B990 to these programme variants will not be eligible for IBMS accreditation.

Academic Year of Study  3

<table>
<thead>
<tr>
<th>Module Title</th>
<th>Module Code</th>
<th>Credits</th>
<th>Level</th>
<th>Module Selection Status</th>
<th>Academic Year of Study</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomedical Science Research Project</td>
<td>SBS084</td>
<td>30</td>
<td>6</td>
<td>Elective</td>
<td>3</td>
<td>Semesters 1 &amp; 2</td>
</tr>
<tr>
<td>Project skills in Biomedical Sciences</td>
<td>SBS206</td>
<td>30</td>
<td>6</td>
<td>Elective</td>
<td>3</td>
<td>Semesters 1 &amp; 2</td>
</tr>
<tr>
<td>Biomedical Case Approach to Problem Solving</td>
<td>SBS320</td>
<td>15</td>
<td>6</td>
<td>Compulsory</td>
<td>3</td>
<td>Semesters 1 &amp; 2</td>
</tr>
<tr>
<td>Clinical Pharmacology</td>
<td>BMD372</td>
<td>15</td>
<td>6</td>
<td>Compulsory</td>
<td>3</td>
<td>Semester 1</td>
</tr>
<tr>
<td>Receptors and Mechanisms of Cell Signalling</td>
<td>BMD373</td>
<td>15</td>
<td>6</td>
<td>Compulsory</td>
<td>3</td>
<td>Semester 1</td>
</tr>
<tr>
<td>Clinical Trials and Regulatory Affairs</td>
<td>BMD378</td>
<td>15</td>
<td>6</td>
<td>Compulsory</td>
<td>3</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Drug Discovery and Design</td>
<td>BMD371</td>
<td>15</td>
<td>6</td>
<td>Compulsory</td>
<td>3</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Molecular Basis of Personalised Medicine</td>
<td>BMD383</td>
<td>15</td>
<td>6</td>
<td>Compulsory</td>
<td>3</td>
<td>Semester 2</td>
</tr>
</tbody>
</table>
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 340 points at A2 level on the UCAS points tariff system, including a minimum of a grade B in both 'A2' Biology and '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 Do We Listen 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 Learning and Teaching Committee, or equivalent, which advises the School/Institute 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 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; 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.

Academic Support

Each student is provided with a personal academic guidance tutor (or "advisor") who is a member of SBCS academic staff. This person is the main point of contact for advice regarding academic matters and for assistance with pastoral concerns, throughout their whole programme. Students can see their advisors in their office hours or arrange an appointment via email. Moreover, if and when advisors are unavailable or cannot help with a specific problem, SBCS has several Senior Advisors to assist with student concerns. The School also operates a PASS programme for peer guidance.

For the third year of your studies students will also have access to a student support officer or second advisor based within SMD.

Programme-specific Rules and Facts

Transfer from the B990 programme to the B993 programme at the end of year 2 is conditional upon making a successful application. The process for applying for such a transfer is described in the B990 Student Handbook, published at the time of original enrolment.

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,
Programme Title: Biomedical Sciences (Pharmacology)

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

A degree in Biomedical Sciences (Molecular Medicine) will allow 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.

Potential employers include:
- University research laboratories
- NHS laboratories
- Public Health Laboratory Service (PHLS)/microbiology laboratories
- private pathology laboratories
- veterinary and agricultural laboratories
- forensic laboratories.

Programme Specification Approval

| Person completing Programme Specification | Prof Lucinda Hall |
| Person responsible for management of programme | Dr Sadani Cooray |
| Date Programme Specification produced/amended by School Learning and Teaching Committee | 9 Feb 2016 |
| Date Programme Specification approved by Taught Programmes Board | |