

Programme Title: Intercolated BSc in Experimental Pathology



## Programme Specification

Awarding Body/Institution	Queen Mary, University of London
Teaching Institution	Queen Mary, University of London
Name of Final Award and Programme Title	Bachelor of Science Intercolated
Name of Interim Award(s)	N/A
Duration of Study / Period of Registration	1 academic year
QM Programme Code / UCAS Code(s)	UBZF QMICMS1 Route Code USEXP
QAA Benchmark Group	
FHEQ Level of Award	Level 6
Programme Accredited by	N/A
Date Programme Specification Approved	More than 4 years ago
Responsible School / Institute	Blizard Institute

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

School of Engineering & Materials Science

Barts Cancer Institute

William Harvey Research Institute

Institution(s) other than Queen Mary that will provide some teaching for the programme

On occasion one of the research projects may be supervised at Moorfields, University College London.

### Programme Outline

Pathology can be described as the study of disease. To understand the disease state, it is essential to understand the normal processes of the body. This course offers areas of learning in specific areas of pathology covering some of the major afflictions of the modern world. This includes cardiovascular disease, inflammatory diseases, neurodegenerative diseases and cancer. A module on materials used to alleviate diseases of this type is also on offer. This course emphasises the importance of research and experimentation in the advance of our understanding of pathological disorders and how this and the latest developments in technology can be utilised for the benefit of the patient. Students will gain an in depth grounding in the science behind pathology and gain skills in experimentation and presentation on completion of the course.

Students should gain sufficient knowledge and insight for analysis, synthesis and evaluation of the areas of pathology cited above. This will amount to an ability to analyse and appraise information and data, to breakdown complex issues associated with pathology and to compare and contrast alternative view points on clinical and scientific concepts as and when they arise.

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The projects allow students to construct and develop novel ideas. They also promote training in how to plan, organise and where necessary reconstruct a programme of work over a six month time period. The final report will require appraisal and evaluation of experimental procedure and data, the construction of new hypotheses and their subsequent defence and justification. This will require, in part, the skill to estimate and thus discriminate the important aspects of their work from that which is less relevant to their conclusions and designs for future work.

### Aims of the Programme

The aims of this course are to furnish our students with a thorough grounding in specific areas of experimental pathology. As students progress through the MBBS course, it is our aim for this intercalated degree to reinforce the biology and science behind clinical practice and to establish a more profound understanding of the value of research in the doctors of tomorrow. Our aim is to instill an in-depth knowledge of pathology by introducing our students to neuropathology, cancer biology, inflammation and auto-immune diseases, cardiovascular disease and the role of a range of materials developed for the management and treatment of pathological disorders. It is our intention that by the end of the programme, our students will appreciate the importance of experimentation and technological innovation in modern medicine, that they will have gained a range of practical skills from pursuing one of our projects and that they will be more proficient in transferable skills such as project writing, oral presentation, working as a team member and be encouraged in the pursuit of independent learning. Our students will be prepared also for the rigors of studying for a higher degree, should they choose to do so, later in their careers.

### What Will You Be Expected to Achieve?

You will achieve high levels of knowledge of key areas of pathology, you will be equipped with the skills to handle and present complex scientific data and return to medicine with a skills set that will benefit you and your patients.

#### Academic Content:

A 1	Experimental Neuropathology: neuronal cell structure and function, neurological defects acquired through head injury, the clinical and pathological manifestations of neuro degeneration and the technology used to investigate and treat the above e.g. genetic analysis, animal models and stem cell replacement.
A 2	Cardiovascular Pathophysiology: normal development of the cardiovascular system during growth and aging, pathogenesis of cardiovascular disease with respect to mechanical load such as increased blood pressure or reduced flow, the epidemiological factors associated with vascular pathology and novel non-invasive measurement techniques to monitor abnormal blood vessel properties.
A 3	Cancer Biology: importance of homeostasis and its deregulation in oncogenesis in terms of cell proliferation and apoptosis, the biological and molecular processes influencing tumourigenesis and metastasis, the clinical and scientific basis of cancer management and treatment via surgical resection, radiotherapy and anti-cancer agents used in chemotherapy.
A 4	Inflammation and Special Subjects in Pathology: an overview of inflammation (chronic and acute), mechanisms of inflammatory pain, the mediators of inflammation, the regulation of acute inflammation, the mechanisms of auto-immune disease and neuro-endocrine modulation of inflammation. The special topics in clinical pathology include sessions on the bladder, the gastro-intestinal system and histopathological diagnosis and monitoring of prostate and testicular carcinomas.
A 5	Science of Biocompatibility: an overview of the concepts involved in the biocompatibility of materials and their dependence on application, the range and complexity of biological responses to materials, devices and restoration, the range of effects that the physiological environment can have on material, device or restoration functionality and the methods used to assess biocompatibility and the associated ethics.
A 6	Core Laboratory Methods: a series of lectures on key laboratory methods that includes protein analysis, microscopy, molecular biology, reading and interpreting research papers and statistics. The latter includes an SPSS workshop.
A 7	Research Project: a piece of original research, supervised by a senior academic expert in the field, presented as an oral presentation and a written document not exceeding 8000 words

Disciplinary Skills - able to:	
B 1	Apply cognitive skills to the role of pathology in describing the natural history of disease.
B 2	Evaluate and interpret the way in which disturbances in the homeostatic control mechanisms, that maintain normal healthy function, can lead to disease
B 3	Conduct a research project under supervision, collate, analyse and interpret data and to present it orally and in written format, in a logical and coherent manner
B 4	To acquire and put to use a range of transferable skills required for the clinical research environment e.g. planning, teamworking, responsibility, professional integrity, honesty and self-confidence.
B 5	gain sufficient insight for analysis, synthesis and evaluation of knowledge gained in pathology
B 6	acquire an ability to analyse and appraise information and data
B 7	compare and contrast alternative view points on clinical and scientific issues in pathology
B 8	acquire an ability for appraisal and evaluation of experimental procedure and data
B 9	construct new hypotheses and subsequently defend and justify them
B 10	evaluate and judge the information and insights gained on the course

Attributes:	
C 1	An in depth knowledge of pathology and its place in modern medicine
C 2	A first hand appreciation of the importance of research and development in pathology and more generally, modern medicine
C 3	A curiosity and openness to change
C 4	Respect for the opinion of others
C 5	Have key transferable skills to help with career goals and continuing education

## How Will You Learn?

Each taught module will take place over a period of one term. The learning process is formal lectures backed up by directed reading. Modules in cardiovascular pathophysiology and cancer biology in addition have smaller group tutorials. Most of the lecturers are drawn from faculty where the emphasis of lecture content will reflect the latest research interests of the lecturer. In addition, lectures are invited from colleagues in the NHS and in some cases specialists from abroad.

Modules in cardiovascular pathophysiology and cancer biology also set course work in the form of essay writing and the marks go toward final assessment for these modules.

Self-directed study in the form of preparation for scheduled sessions, revision and wider reading e.g researching subjects from PubMed, is a key component of this course.

Sessions in experimental method and design, core laboratory methods, statistical analysis plus workshops in project writing and examination answer writing, from the Queen Mary English Language and Study Skills unit complement the formal learning and

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are designed to enrich the learning process.

At least half the learning time will be spent on a research project. The usual location are laboratories at Whitechapel e.g. Blizard Building or the Pathology and Pharmacy Building or at Charterhouse e.g. Barts Cancer Institute. All spaces contain state of the art technology and world experts in research and technological innovation and provide unique top-ranking learning environments.

### How Will You Be Assessed?

The overall assessment is based upon assessing four modules worth 15 credits each and the project which is worth 60 credits giving a total of 120 credits. Assessment is through examination in the form of essay writing, course work for some modules and a project write up. This is summarised below.

Experimental Neuropathology: 100% examination, answer three questions from six in a three hour examination

Cardiovascular Pathophysiology: 80% examination, answer four questions from six in a two and a half hour examination PLUS 20% by course work (essay)

Cancer Biology: 80% examination, answer four questions from six in a three hour examination PLUS 20% by course work (essay)

Inflammation and Special Topics in Pathology: 100% examination, answer three questions from eight in a three hour examination where two must be from section A (Inflammation) and one from section B (Special Topics in Pathology)

Science of Biocompatibility: 80% examination, details from School of Engineering and Material Sciences plus 20% by course work

Project write up: a document of not more than 8000 words marked by internal assessors.

All marking is done with reference to the recommendations of the Framework for Higher Education Quality (FHEQ) for level 6 released by the QAA. All examinations and project write-ups are marked independently by at least two markers.

### How is the Programme Structured?

This is a one academic year full time course.

It requires the acquisition of 120 credits in total, achieved by studying four taught modules out of a possible five on offer, that are of 15 credits each PLUS successful completion of a research project of 60 credits.

## Academic Year of Study 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Experimental Neuropathology	ICM6021	15	6	Compulsory	1	Semester 1

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Cardiovascular Pathophysiology	ICM6023	15	6	Compulsory	1	Semester 1
Inflammation and Special Topics in Pathology	ICM6022	15	6	Elective	1	Semester 2
Cancer Biology	ICM6020	15	6	Compulsory	1	Semester 2
Science of Biocompatibility	MAT6312	15	6	Elective	1	Semester 2
Project	ICM6024	60	6	Compulsory	1	Semesters 1 & 2

### What Are the Entry Requirements?

We adopt the Barts and The London School of Medicine and Dentistry policy on entry to the course.

This is successful completion of all aspects of year 3 or year 4 MBBS or BDS degrees.

Overseas students must have English Language proficiency of an IELTS score of 6.5 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

The course organiser gives two formal introductory sessions and one informal session in the first two weeks of the course. All aspects of the course are described in depth and there is a questions and answers session as part of this induction.

Courses in core laboratory methods, including statistics, and workshops by the English Language unit at Queen Mary provide formal academic support for the core subjects under assessment.

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Personal support for individuals is provided by module leads. Personal mentoring is provided by project supervisors and the course organiser has an open-door policy towards any problems relating to academic progress or pastoral issues that arise from time to time.

### Programme-specific Rules and Facts

This course is ideal for those interested in experimentation, research and development. The emphasis is on innovation and the importance of this in health care in the modern world

### 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

Experience suggests that medical students who elect to intercalate gain a greater understanding of the science behind medicine and therefore a greater understanding of medicine itself. The subject chosen for intercalated studies may influence individuals in their choice of clinical placement during FY1 and 2. Intercalating with Experimental Pathology will also provide insight into research at the cutting edge which may help future doctors in their decision to study for higher degrees either in this country or abroad.

Since the project is 50% of the course it is inevitable that you will meet, and make contact with, individuals who may be your colleagues in future years. Intercalating is a great opportunity to make the first contact with experts in the field who may be able to advise you in the future

Apart from networking, it is hoped that you acquire a range of other transferable skills. This will include many aspects of the skills promoted by Vitae, the organisation devoted to the realisation of the potential of researchers. Examples encompass the maximisation of knowledge and intellectual ability skills, personal effectiveness, research governance and organisation, and engagement, influence and impact in the working environment.

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## Programme Specification Approval

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**Person completing Programme Specification**

Dr Paul Allen

**Person responsible for management of programme**

Dr Paul Allen

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

**Date Programme Specification approved by  
Taught Programmes Board**

More than 4 years ago