

**Programme Specification for the BSc in Medical Sciences with Haematology**

PLEASE NOTE. This specification provides a **concise** summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. This specification provides a source of information for students and prospective students seeking an understanding of the nature of the programme and may be used by the College for review purposes and sent to external examiners. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the course handbook or on-line at <https://education.med.imperial.ac.uk/Years/4-1011/haem/index.htm>. The accuracy of the information contained in this document is reviewed by the College and may be checked by the Quality Assurance Agency.

1. **Awarding Institution:** Imperial College London
2. **Teaching Institution:** Imperial College London
3. **External Accreditation by Professional / Statutory Body:** Not applicable
4. **Name of Final Award:** BSc (Honours)
5. **Programme Title:** **Medical Sciences with Haematology**
6. **Name of Department / Division:** Undergraduate Medicine
7. **Name of Faculty:** Faculty of Medicine
8. **UCAS Code:** **A132**
9. **Relevant QAA Subject Benchmarking Group(s) and/or other external/internal reference points:** <http://www.qaa.ac.uk/academicinfrastructure/benchmark/honours/medicine.pdf>

**10. Level(s) of programme within the Framework for Higher Education Qualifications (FHEQ):**

Bachelor's (BSc, BEng, MBBS)	Level 6
Integrated Master's (MSci, MEng)	Levels 6 and 7
Master's (MSc, MRes)	Level 7

11. **Mode of Study:** **Full Time**
12. **Language of Study:** English
13. **Date of production / revision of this programme specification (month/year):** **January 2010**
14. **Educational aims/objectives of the programme:**

The programme aims/objectives are to:

- attract motivated students and teach them in a way that encourages originality of thought and breadth of vision;
- provide a supportive learning environment, underpinned by skilled teaching and world class research;
- provide distinctive modules at each level (Year 4 of the MBBS/BSc degree) within appropriate areas of haematology, drawing on the expertise and strengths of our academic staff;

- produce graduates well trained in laboratory and research skills and with an understanding of how molecular lesions explain disease phenotypes;
- foster the ability to work independently and as part of a group, and to develop presentation skills, both written and oral;
- allow the student to gain an in-depth knowledge of the genetic control, structure and function of the cellular constituents of the blood and bone marrow and of the plasma factors concerned with immune responses and with haemostasis and thrombosis;
- deal with both normal physiology and relevant pathological conditions;
- ensure that students understand the interface between basic science and clinical medicine and provides the students with the opportunity to both meet patients with haematological disorders and understand the underlying pathological basis of disease;

## 15. Programme Learning Outcomes

### 1. Knowledge and Understanding

#### Knowledge and Understanding of:

1. how hypotheses are formulated, what constitutes good experimental design and how a research plan is developed;
2. the structure and functions of genes, particularly in relation to haemoglobin genes and genes encoding coagulation factors and antithrombotic proteins;
3. molecular genetic and cytogenetic techniques and their role in giving new knowledge of normal and abnormal haemopoiesis and leukaemogenesis;
4. the scientific basis of blood transfusion.

#### Teaching/learning methods and strategies

1. Acquisition of knowledge and understanding is through a two week introductory course in Year 4 of the MBBS course followed by three more advanced and specialist modules. Lectures are an integral part of all modules and are supported by a variety of other teaching and learning methods, including tutorials, laboratory work, computer-assisted learning, videos and coursework;
2. Students are encouraged to undertake independent reading both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject;
3. Assessment of the knowledge and skill base is through a combination of written examinations and in-course assessment which includes essays, data analysis, critical review of papers, reports and presentations and oral and written presentation of a research project ;
4. At many points during the course the student has the chance to meet patients with haematological diseases so that they can relate the clinical manifestations of a disease to what they have learnt of the pathological basis and so that the basic science they are learning is seen as clinically relevant and meaningful.

### 2. Skills and other Attributes

#### Intellectual Skills (lateral and critical thinking, logic):

Be able to:

1. integrate and evaluate information;
2. formulate and test hypotheses using appropriate experimental design and statistical analysis of data;
3. plan, conduct and write-up a programme of original research

#### Teaching/learning methods and strategies

Intellectual skills are developed through the teaching and learning methods outlined above and in section 17. Information sifting and sorting, analysis and problem solving skills are promoted through the use of group exercises. Experimental design skills are developed in lectures and coursework in the foundation and core courses and subsequently in project work. Individual, formative and summative feedback is

given to students on all work produced including oral presentations.

Assessment is through coursework, unseen written examinations and project work.

**Practical Skills (experimental design, data analysis, research skills):**

Be able to:

1. critically evaluate scientific papers;
2. critically evaluate electronic sources of information;
3. formulate and test hypotheses using appropriate experimental design and statistical analysis of data;
4. plan, conduct and write-up a programme of original research.

**Teaching/learning methods and strategies**

Intellectual skills are developed through the teaching and learning methods outlined above and in section 17. Information sifting and sorting, analysis and problem solving skills are promoted through the use of group exercises and detailed feedback on practicals and in course assessment. Experimental design and statistical skills are developed in lectures and computer-based practical work in the foundation and core courses and subsequently in project work. Individual, formative and summative feedback is given to students on all work produced including oral presentations.

Assessment is through coursework, unseen written examinations and project work.

**Transferable Skills (initiative, group work, independent thought):**

Be able to:

1. communicate effectively through oral presentations, computer processing and presentations, and written reports;
2. apply statistical skills;
3. work independently and as part of a team;
4. integrate and evaluate information from a variety of sources;
5. use Information and Communications Technology;
6. manage resources and time;
7. learn independently with open-mindedness and critical enquiry;
8. learn effectively for the purpose of continuing professional development.

**Teaching/learning methods and strategies**

Transferable skills are developed through the teaching and learning programme outlined above and in section 17.

1. is taught through coursework and developed through feedback on reports, essays and oral presentations.
2. is taught through lectures and developed, as appropriate, during individual research projects.
3. is developed through coursework, including group practicals.
4. is developed through detailed oral and written feedback on all course work and through the research project.
5. is developed through computer-based learning, coursework, individual learning and the project.
6. is developed throughout the course within a framework of staged coursework deadlines and examination system.

Although not explicitly taught, skills 7 and 8 are encouraged and developed throughout the course, which is structured and delivered in such a way as to promote this.

1. is assessed through coursework, presentations and written examinations.
2. to 5. are assessed through coursework, including project work.
4. is also assessed through written examinations.

**16. The following reference points were used in creating this programme specification**

- Student Handbook for Course;
- QAA guidelines for preparing Programme Specifications ([www.qaa.ac.uk](http://www.qaa.ac.uk)).

## 17. Programme structure and features, curriculum units (modules), ECTS assignment and award requirements

The degree programme is offered as a full-time course embedded within the MBBS degree course and leads to the **BSc Honours Degree in Medical Sciences with Haematology**. Students taking the Medical Sciences with Endocrinology degree option must complete a specialist two week introductory course in the autumn term of year 4 to progress to the remainder of the BSc (Honours) year (year 4 of the MBBS/BSc course). The introductory course is examined via in-course assessment and year 4 core modules 1-3 are examined by written papers in the spring term. The BSc year continues with students taking either a full-time 10-week independent research project, or a specialist course equivalent to 2 modules. Students taking the research project are assessed by oral presentation, project write-up and performance during the project. Students taking one of the three available specialist courses are assessed by oral presentation, mini-project write-up, and performance during the mini-project.

**Year One:** Not applicable

**Term one:**

**Term Two:**

**Term Three:**

**Year Two:** Not applicable

**Term one:**

**Term Two:**

**Term Three:**

**Year Three (if applicable):**

**Term one:**

2-week **BSc Foundation course in Haematology** with the following aims and objectives:

- Analyse and interpret data, using relevant statistics where appropriate
- Understand the concept of developing and testing a hypothesis
- Understand the principles of experimental design
- Understand the concept of plagiarism and how to avoid it
- Have had experience of written scientific communication
- Understand the fundamental principles and practice of scientific research
- Appreciate the legal and ethical issues surrounding scientific research
- Critically review scientific literature

**Term Two:** Not applicable

**Term Three:** Not applicable

**Year Four:**

2-week **introductory course in Haematology** with the following aims and objectives:

- Analyse and interpret data, using relevant statistics where appropriate

- Understand the concept of developing and testing a hypothesis
- Understand the principles of experimental design
- Understand the concept of plagiarism and how to avoid it
- Have had experience of written scientific communication
- Understand the fundamental principles and practice of scientific research
- Appreciate the legal and ethical issues surrounding scientific research
- Critically review scientific literature
- Acquire some basic knowledge that will provide a foundation for the three modules that follow (including the scientific basis of blood transfusion, gene structure and function, sickle cell disease, thrombosis and haemostasis and leukaemia)

**Term One:** Students commence with a **Red Cells** module (Module 1), which describes the knowledge and understanding of disorders of the red cell, provides generic skills for diagnosing beta thalassaemia trait and syndromes and for evaluation of the prospects for gene therapy of inherited haematological disorders. This module introduces topics ranging from the structure, function and abnormalities of the haemoglobins to inherited and acquired bone marrow failure syndromes, anaemias and malaria. This is followed by a **Thrombosis and Haemostasis** module, which concludes the autumn term and deals with the scientific basis of haemostasis and thrombotic disorders. The second module introduces coagulation proteins, haemostasis, lysing of clots and thrombi, recombinant therapeutic proteins and gene therapy, pathogenesis of venous and arterial thrombosis, thrombophilia testing, the scientific basis of oral and parenteral anticoagulation and fibrinolysis. It also deals with novel therapeutic options, including their theoretical advantages and likely impact on future management of patients with thrombotic disease.

**Term Two:** The spring term begins with Module 3 - **Leukaemias, Lymphomas and Multiple Myeloma**. This module gives an understanding of the nature of leukaemia, lymphoma and multiple myeloma, including their aetiology, pathogenesis, clinicopathological features and the role of oncogenes and tumour suppressor genes in the causation of these diseases. The module teaches generic skills and knowledge of aetiology and principles of treatment of the diseases. During the latter part of this term, the students are examined on core modules 1 – 3. After completing the examinations, students commence their research project or a specialist course. Usually research projects are available for the majority of the students doing a BSc in Haematology.

**Term Three:** The summer term commences with continuation of the research project or specialist course. At the end of the either assignment, students are assessed by an oral presentation of their studies and a project or a mini-project write-up of approximately 5000 words.

**18. Support provided to students to assist learning (including collaborative students, where appropriate):**

- A course guide provides more detailed information (also published electronically).
- The School of Medicine Undergraduate Teaching Intranet.
- Additional information provided on Faculty/Department Intranet.
- Extensive library (7-day, 24h opening in term time) and other learning resources and facilities at St. Mary's campus and further facilities at Hammersmith Hospital campus.
- Dedicated computing, printing and copying facilities with extended daily access, and providing e-mail, on-line journals, journal databases (e.g. Web of Science, Medline). Log-on facility (VPN) from outside College.
- Modern teaching laboratories and access where appropriate to adjacent research facilities.
- A staff - student liaison group.
- Research Seminar carefully selected to be relevant to specific modules.
- In addition to the Course Leader and Module Leaders, all students are allocated personal tutors whose role is both pastoral and academic.
- Student email and open personal access to tutorial staff including the Course Leader, Module Leaders and the Deputy Head of Department (Teaching).
- Access to the Officers of the Medics Student Union (based in the Medical School Building).
- Access to the Senior Welfare Tutor for Year 4 (BSc), Faculty of Medicine.
- The Director of Education.
- The Faculty Education Office (FEO) who provide a first point of contact for all matters concerning students.

- Access to student counsellors on the South Kensington site.
- Access to Teaching and Learning Support Services, which provide assistance and guidance, e.g. on careers.
- Opportunities for students to conduct their Final Year Research Projects in other Departments/Centres within Imperial College.

#### **19. Criteria for admission:**

All students will have met the minimum entrance requirements for the School of Medicine MBBS/BSc programme and have successfully completed years 1, 2 and 3 of the course.

#### **20. Processes used to select students:**

The selection of students for the BSc operates via student BSc choice submission and allocation of the students to BSc based on their submitted choices and academic performance in Years 1, 2 and 3. A BSc Appeals procedure is in place to ensure that students unsatisfied with their original BSc choice and allocation can be considered for re-allocation to another course, subject to available places and satisfactory academic performance.

#### **21. Methods for evaluating and improving the quality and standards of teaching and learning**

##### **a) Methods for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards:**

The external examiner system and Boards of Examiners are central to the process by which the College monitors the reliability and validity of its assessment procedures and academic standards. Boards of Examiners comment on the assessment procedures within the College and may suggest improvements for action by relevant departmental teaching Committees.

The Faculty Studies Committees review and consider the reports of external examiners and accrediting bodies and conduct periodic (normally quinquennial) and internal reviews of teaching provision. Regular reviews ensure that there is opportunity to highlight examples of good practice and ensure that recommendations for improvement can be made.

At programme level, the Head of Department/Division has overall responsibility for academic standards and the quality of the educational experience delivered within the department or division.

Most of the College's undergraduate programmes are accredited by professional engineering and science bodies or by the General Medical Council. Accreditation provides the College with additional assurance that its programmes are of an appropriate standard and relevant to the requirement of industry and the professions.

##### **Mechanisms for evaluation of teaching, learning, assessment, the curriculum and outcome standards**

- Annual course review undertaken by the Faculty of Medicine BSc Quality Assurance group of the Education Committee Year 4 – BSc. The review will be considered by the Education Committee Year 4 – BSc and will cover all aspects of the course including progression and degree statistics, External Examiner Reports, student feedback and peer review [see below], feedback from module leaders and other staff.
- Staff – Student Liaison Group Year 4.
- College *Student On-Line Lecturer Evaluation* (SOLE) and in-house course questionnaires organised by module convenors.
- Biennial staff appraisals by Section Heads, reviewed by the Head of Department.
- Peer teaching observations, which are monitored by the Deputy Head of Department (Teaching).
- External Examiner reports.
- Departmental Executive Committee.
- Review by the Quality Assurance Agency.
- Reviews by the GMC.

**b) Committees with responsibility for monitoring and evaluating quality and standards:**

The **Senate** oversees the quality assurance and regulation of degrees offered by the College. It is charged with promoting the academic work of the College, both in teaching and research, and with regulating and supervising the education and discipline of the students of the College. It has responsibility for approval of changes to the Academic Regulations, major changes to degree programmes and approval of new programmes.

The **Quality Assurance Advisory Committee** (QAAC) is the main forum for discussion of QA policy and the regulation of degree programmes at College level. QAAC develops and advises the Senate on the implementation of codes of practice and procedures relating to quality assurance and audit of quality and arrangements necessary to ensure compliance with national and international standards. QAAC also considers amendments to the Academic Regulations before making recommendations for change to the Senate. It also maintains an overview of the statistics on completion rates, withdrawals, examination irregularities (including cases of plagiarism), student appeals and disciplinaries.

The **Faculty Studies Committees** are the major vehicle for the quality assurance of undergraduate courses. Their remit includes: setting the standards and framework, and overseeing the processes of quality assurance, for the areas within their remit; monitoring the provision and quality of e-learning; undertaking reviews of new and existing courses; noting minor changes in existing programme curricula approved by Departments; approving new modules, changes in module titles, major changes in examination structure and programme specifications for existing programmes; and reviewing proposals for new programmes, and the discontinuation of existing programmes, and making recommendations to Senate as appropriate.

The **Faculty Teaching Committees** maintain and develop teaching strategies and promote inter-departmental and inter-faculty teaching activities to enhance the efficiency of teaching within Faculties. They also identify and disseminate examples of good practice in teaching.

**Departmental Teaching Committees** have responsibility for the approval of minor changes to course curricula and examination structures and approve arrangements for course work. They also consider the details of entrance requirements and determine departmental postgraduate student numbers. The Faculty Studies Committees and the Graduate School Postgraduate Quality Committees receive regular reports from the Departmental Teaching Committees.

**Haematology Teaching Committee** ensures the integration of all haematology teaching within the 6-year course so that the BSc in Medical Science with Haematology follows on from the teaching in the first three years and that the student returns to year 5 teaching without having lost contact with clinical medicine. This committee also ensures the high quality of teaching in the BSc.

**Committees with responsibility for monitoring and evaluating quality and standards**

- Staff – Student Liaison Group Year 4.
- Faculty of Medicine BSc Quality Assurance group.
- Faculty of Medicine Education Committee Year 4 – BSc.
- Medical Studies Committee.
- Departmental Executive Committee.
- Board and Sub-Board of Examiners – meets to consider final degrees.
- Examinations and Assessments Committee.
- College Undergraduate Studies Committee.
- College Quality Assurance Committee (with student representation).
- Imperial College, Senate

**c) Mechanisms for providing prompt feedback to students on their performance in course work and examinations and processes for monitoring that these named processes are effective:**

The following regulations and guidelines for feedback on student performance apply:

- There is no definitive College ruling on the means of providing assessment results for coursework other than that that marks should be released to students after confirmation by the Board of Examiners. Course tutors should ensure that the students are given appropriate feedback on their work by issuing marks indicative of the boundaries within

which the actual marks fall (i.e. first class; upper second; lower second; third; pass; fail) according to the following criteria:

- Marks should only be given for coursework which contributes to the assessment of a discrete course element, e.g. practical write-ups, coursework essays.
- Marks should not be issued for major discrete course elements, e.g. final year projects and dissertations prior to the meeting of the Board of Examiners. Detailed information of marks for elements of formal examinations (Part B) can only be released to a student after he/she had submitted a request under the Freedom of Information Act to Registry that is liable to a fee. Granted requests allow the student access to his/her script under supervision by a member of the FEO. The granted requests do not allow copying of documents or subsequent discussion of assigned marks with examiners.
- Marks for any element of work should be released simultaneously to the entire cohort of students after undergoing departmental moderation procedure
- Students must be informed that all marks released are provisional until confirmed by the Board of Examiners. Any noted justifications for issued marks should be maintained for at least a year.
- Coursework should normally be marked and returned to provide feedback within two weeks of the deadline for submission.
- As good practice, it is recommended that the BSc courses use an approved In-course Assessment Feedback form for feedback on student performance in the in-course assessment of the Introduction to the BSc course, Part B modules, Specialist course Module 4 and the BSc Foundation course.

**d) Mechanisms for gaining student feedback on the quality of teaching and their learning experience and how students are provided with feedback as to actions taken as a result of their comments:**

- Staff – Student Liaison Group Year 4.
- Faculty of Medicine Education Committee Year 4 – BSc - student representative.
- Feedback sessions for each module and SOLE
- Faculty Education Office, Personal Tutors, Senior Welfare Tutor for the BSc (FoM), Course Directors and Module Leaders.
- Vivas with External Examiners.

**e) Mechanisms for monitoring the effectiveness of the personal tutoring system:**

The BSc Welfare Tutoring system, introduced from 2009/10, is designed to cater for the welfare needs of BSc students coming off the clinical Year 3. In Year 4, the BSc students will retain their clinical tutor but will also have an allocated BSc course tutor. The BSc Welfare tutoring system will be overseen by the Senior Welfare Tutor for the BSc in the Faculty of Medicine, the Head of Undergraduate Medicine, and the established committee structure for the BSc, beginning with the Staff-Student Liaison Group - Year 4 (SSLG 4).

**f) Mechanisms for recognising and rewarding excellence in teaching and in pastoral care:**

Staff are encouraged to reflect on their teaching, in order to introduce enhancements and develop innovative teaching methods. Each year College awards are presented to academic staff for outstanding contributions to teaching, pastoral care or research supervision. A special award for Teaching Innovation, available each year, is presented to a member of staff who has demonstrated an original and innovative approach to teaching. Nominations for these awards come from across the College and students are invited both to nominate staff and to sit on the deciding panels.

**g) Staff development priorities for this programme include:**

- College and Faculty of Medicine Staff Development Courses;
- staff appraisal scheme and institutional staff development courses;
- active encouragement of membership of the ILTHE; new Lecturers are encouraged to take the Certificate of Advanced Study in Learning and Teaching [CASLAT] run by the Imperial College Centre for Educational Development;
- College Teaching Development and Teaching Research Grant Schemes to fund the development of, and research into, new teaching and appraisal methods;
- Updating professional and IT/computing developments.

## 22. Regulation of Assessment

### a) Assessment Rules and Degree Classification:

For **undergraduate programmes** classification of degrees will be according to the following range of marks:

First class	70 - 100%
Second class (upper division)	60 - 69.9%
Second class (lower division)	50 - 59.9%
Third class	40 - 49.9%

Where appropriate, a Board of Examiners may award a result of merit where a candidate has achieved an aggregate mark of 60% or greater across the programme as a whole AND has obtained a mark of 60% or greater in each element with the exception of one element AND has obtained a mark of 50% or greater in this latter element.

Where appropriate, a Board of Examiners may award a result of distinction where a candidate has achieved an aggregate mark of 70% or greater across the programme as a whole AND has obtained a mark of 70% or greater in each element with the exception of one element AND has obtained a mark of 60% or greater in this latter element.

### Assessment in the BSc in Medical Sciences with Haematology

The BSc Introductory course in Year 4 is assessed via course work only. The in-course assessment will comprise one compulsory piece, the type of which will be at the discretion of the course organiser.

The BSc, Part B, is assessed via in-course assessment – 2 compulsory pieces for each of the three Part B modules, contributing a total of 30% of the module's mark, and a written examination paper, part of the Part B examination, contributing 70% of the overall module mark.

Part C of the BSc is assessed 1) for students undertaking a BSc Project: via a project write-up, contributing 70% to the overall Part C mark, an oral presentation of the project, contributing 20% of the overall Part C mark, and a mark of the performance of the student during the project, contributing 10% of the overall Part C mark; and 2) for students undertaking a specialist course: via in-course assessment – two pieces contributing a total of 40% (20% each) of the overall Part C mark, a mini-project write-up, contributing 30% of the overall Part C mark, an oral presentation of the mini-project, contributing 20% of the overall Part C mark, and a mark of the performance of the student during the mini-project, contributing 10% of the overall Part C mark.

### b) Marking Schemes for undergraduate and postgraduate taught programmes:

The Pass Mark for all **undergraduate** modules is 40%. From October 2008 entry all undergraduates are required to pass all their course units to progress to the next year.

### c) Processes for dealing with mitigating circumstances:

**For undergraduate programmes:** Candidates with mitigating circumstances are not subject to the borderline restrictions but should be considered individually. However, as a general principle, candidates whose marks are more than 5% below the borderline should not normally be raised to the next higher classification. Where the Board of Examiners determines that a higher classification should be awarded extra marks should be applied to bring the final marks into the higher range.

### d) Processes for determining degree classification for borderline candidates:

**For undergraduate programmes:** Candidates who fall no more than 2.5% below the minimum mark for a higher honours classification shall be eligible for review of their final classification; this review could include an oral examination or practical test or other mechanism appropriate to the discipline. Candidates whose marks are below the 2.5% borderline may be considered for a higher honours classification where certain provisions apply. Where the Board of Examiners determines that a candidate should be awarded a higher honours classification extra marks should be applied to bring their final marks into the higher range. Detailed records of all decisions should be recorded in the minutes of the meeting of the Board.

**e) Role of external examiners:**

The primary duty of external examiners is to ensure that the degrees awarded by the College are consistent with that of the national university system. External examiners are also responsible for approval of draft question papers, assessment of examination scripts, projects and coursework (where appropriate) and in some cases will attend *viva voce* and clinical examinations. Although external examiners do not have power of veto their views carry considerable weight and will be treated accordingly. External examiners are required to attend each meeting of the Board of Examiners where recommendations on the results of individual examinations are considered. External examiners are required to write an annual report to the Rector of Imperial College which may include observations on teaching, course structure and course content as well as the examination process as a whole. The College provides feedback to external examiners in response to recommendations made within their reports.

**23. Indicators of Quality and Standards:**

- Favourable comments by External Examiners.
- High proportion of students achieving a First Class or Upper Second Class Honours Degree.
- Independent review of the quality of the educational provision of the Department by the Quality Assurance Agency subject review and by the GMC.

**24. Key sources of information about the programme can be found in at:**

<https://education.med.imperial.ac.uk/Years/4-1011/haem/index.htm>