

**Programme Specification for the MSc in Reproductive & Developmental Biology**

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. 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:** None
4. **Name of Final Award** (BEng / BSc / MEng etc): MSc
5. **Programme Title** (e.g. Biochemistry with Management): Reproductive & Developmental Biology
6. **Name of Department / Division:** Reproductive Biology, Surgery & Cancer
7. **Name of Faculty:** Medicine
8. **UCAS Code** (or other coding system if relevant): Not applicable
9. **Relevant QAA Subject Benchmarking Group(s) and/or other external/internal reference points.**

No QAA subject benchmarks available for this Master's programme. Meets the generic criteria for an M-level qualification.

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

**Level 7.**

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 only

**12. Language of Study:** English

**13. Date of production / revision of this programme specification** (month/year): November 2011

**14. Educational aims/objectives of the programme** (when completing this section you may wish to indicate how the programme supports the College Mission Statement, Subject Benchmarks Statements (as listed above), FHEQ qualification level descriptors and the requirements of Accrediting or Statutory Bodies):

The programme aims/objectives are to:

- produce graduates equipped to pursue careers in reproductive and developmental biology in research, in hospitals, in industry, the public sector and non-governmental organisations;
- provide a solid foundation for those who intend to go on to study for a PhD;
- develop understanding of processes at the molecular and cellular level, and how these impact on reproductive and developmental biology.
- provide a training in laboratory and research skills;
- provide a supportive learning environment;
- attract highly motivated students, both from within the UK and from overseas;
- develop new areas of teaching in response to the advance of scholarship and the needs of vocational training.

**15. Programme Learning Outcomes** (please list the programme learning outcomes under the headings that follow. Please also list the teaching/learning methods and strategies used to promote the programme learning outcomes. Module learning outcomes can be listed within Module Handbooks and are not required for this section):

Institutions have an obligation to respond to individual needs and must have due regard to the need to eliminate unlawful disability discrimination and to promote equality of opportunity. To meet the expectations of the Disability Equality Duty (DED), institutions should be pro-active in anticipating the variety of possible requirements that disabled students may have, rather than making adjustments for students on an ad hoc basis. This document should list all the skills needed for students to meet the learning outcomes of the programme and may be used by the College's Disability Advisory Service when considering reasonable adjustments to assessment. You may find the following link to the College Disability Advisory Service useful when completing this section: <http://www3.imperial.ac.uk/disabilityadvisoryservice>

### **1. Knowledge and Understanding**

**Knowledge and Understanding of the following:**

- the fundamental data and concepts in reproductive & developmental biology;
- modern technologies of molecular & cellular biology;
- the application of these techniques to investigate the processes involved in reproductive & developmental biology.
- practical research techniques, including molecular methodologies and some of the following; Cell and tissue culture, protein determination and analysis, localisation of mRNA or protein within tissues, investigation and identification of signal transduction pathways.
- detailed knowledge and understanding of the essential facts, concepts, principles and theories relevant to the student's chosen research project;
- management and communication skills, including problem definition, project design, decision processes, teamwork, written and oral reports, scientific publications.

The methods used in teaching will include lectures, seminars, discussion groups, projects, practical skills, essay writing, oral presentations.

## 2. Skills and other Attributes

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

Students should be able to:

- understand the current breadth and length of knowledge of reproductive & developmental biology.
- integrate and evaluate information from a variety of sources
- formulate and test hypotheses
- be creative in the solution of problems and in the development of hypotheses
- plan, conduct and write-up a programme of original research.
- gain insight into the learning processes and scientific research

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

Students should be able to:

- plan and execute safely a series of experiments;
- use laboratory equipment to generate data;
- analyse experimental results and determine their strength and validity;
- prepare appropriate, accurate reports on scientific data;
- prepare appropriate presentations based on scientific data;
- use the scientific literature effectively;
- use computational tools and packages.

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

Students should be able to:

- communicate effectively through oral presentations, written reports and scientific publications;
- apply statistical skills;
- apply management skills: decision processes, objective criteria, problem definition, project design and evaluation, teamwork and coordination, laboratory safety;
- integrate and evaluate information from a variety of sources;
- transfer techniques and solutions from one discipline to another;
- use Information and Communications Technology;
- manage resources and time;
- learn independently with open-mindedness and critical enquiry;
- learn effectively for the purpose of continuing professional development.

Students with needs that fall within the Disability Equality Duty will be identified immediately on offering a place on the MSc course. Their particular needs will be discussed with the College Disability Advisory Service to identify how assessment can be modified, and what other support may be needed.

**16. The following reference points were used in creating this programme specification (please choose from the following and add any other external reference points used: FHEQ, European Higher Education Area (EHEA), Course Handbook, Subject Benchmark Statements (where appropriate), Professional Statutory and Regulatory Bodies (PSRB) documents etc)**

The main reference point used in creating this programme specification is the course handbook, in conjunction with the PQC and QAA requirements for a Master's level programme.

**17. Programme structure and features, curriculum units (modules), ECTS assignment and award requirements** (for each year of study, please complete the structure for each term (including what modules or course units will be taken and indicate whether there are any pre-requisites). Please also provide information about progression between years. Please indicate whether placement activity will apply to your programme, for example, year abroad):

### **Year One:**

#### **Term one:**

All students attend an introductory programme, which includes an outline of the teaching programme, and transferable skills required for the course. This is followed by specific basic modules on molecular medicine, reproductive endocrinology & signalling, gametogenesis & preimplantation development, and pregnancy. This term concludes with laboratory practical classes.

Three pieces of coursework are linked to this teaching.

#### **Term Two:**

Term 2 will include specific advanced modules on fetal development and complications of pregnancy, reproductive science & medicine, and stem cell biology. The taught programme will include opportunities to discuss possible projects with research groups in the host department.

Two pieces of coursework are linked to this teaching

The five pieces of coursework contribute 22.5 ECTS

There are three written examinations; two essay papers and one data handling paper.

The examinations contribute 22.5 ECTS

#### **Term Three:**

The individual, full-time research project begins a week after the final examination, thus usually running from the middle of March until the beginning of September. The projects are conducted at the Hammersmith Campus of Imperial College London (or other Imperial College London sites, such as South Kensington). The themes of the research projects, offered by prospective supervisors will be made available in term 2, and detailed discussions of the project and experimental approaches initiate the projects in late March. On completion of the project a written report will be produced and submitted for an examination followed by a viva in September with an internal and external examiner, prior to the MSc Examination Board meeting in late September.

The project dissertation and viva contribute 45 ECTS

Full details of award requirements are shown in Section 22.

To achieve a Distinction, students will have to achieve an average of 70% or more.

To achieve a Merit, students will have to achieve an average of 60% or more.

**18. Support provided to students to assist learning (including collaborative students, where appropriate).** (The description should include information about the induction programme, welfare and pastoral support, library and other facilities available to students, personal tutoring, and access to teaching and learning support services, English language support, feedback to students and dissemination of actions taken as a result):

- Induction programme including orientation, introduction to library and computer facilities
- MSc Course Handbook, which includes a full description of the course, timetable, instructions for all course components and examples of previous exam papers.

- A large community of postgraduate research students and postdoctoral research workers who work on many varied aspects of reproductive & developmental biology, in the Institute of Reproductive & Developmental Biology on the Hammersmith Campus.
- A comprehensive external speaker seminar programme at the Hammersmith Campus.
- Library and other learning resources and facilities at Hammersmith, and also at the South Kensington Campus.
- Dedicated computing facilities at Hammersmith.
- Safety lecture given in first week core programme, and detailed safety training at the start of the project.
- The Student Representatives attend one meeting of the MSc Organising Committee per term.
- In addition to the Course administrator, and the Chief Tutor who has overall responsibility for student welfare and guidance, all students are allocated personal tutors whose role is to assist them with personal problems and to advise on pastoral and academic issues.
- Student email and open personal access to tutorial staff including the Course Organiser.
- 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.
- Access to English language courses within the College.
- Opportunities for students to conduct their research projects at a wide range of laboratories within the IRDB.
- Employer needs and opinions feed into the programme through frequent guest lecturers from academia and possible student placements in relevant industries and industry-based research projects.
- Questionnaires on all aspects of the course for the students to comment on the course, and regular meetings with the course organiser to address all concerns raised.

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

The minimum qualification for admission is normally an upper Second Class Honours degree in a life science, clinical or veterinary subject from an UK academic institution or an equivalent overseas qualification. Where an applicant has a lesser degree qualification but has at least 2 years work experience in an appropriate related discipline, a special case for admission may be submitted to the Graduate School Postgraduate Quality Committee.

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

Information provided by applicants is reviewed by two members of staff who are on the Organising Committee, and reach a consensus on whether to offer the applicant a place on the course. The prime consideration is academic ability, so the performance of the applicant at first-degree level is the dominant determinant of the outcome of the application. Interviews are employed in the case of some applicants for whom the information provided may not completely reflect their abilities.

#### **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 and the Graduate School Masters' Quality Committee 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.

#### **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 disciplinarys.

The **Faculty Studies Committees** and **Graduate School Masters' Quality Committees** are the major vehicle for the quality assurance of undergraduate / postgraduate courses respectively. 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 Masters' Quality Committees receive regular reports from the Departmental Teaching Committees.

Teachers are encouraged to attend each others' lectures, by way of giving internal feedback on teaching, and encouraging novel approaches.

#### **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:**

For oral presentations feedback is provided as soon as possible, with grades for the marks obtained, together with discussion with the markers.

Coursework essays are double marked, with written comments on all aspects of the work and an overall grade provided to each student.

Students can seek additional discussion with markers if they wish, and students with weak performances in a piece of work are strongly encouraged to do so.

Feedback on exams is provided by the course organiser as a grade on each paper.

Discussion of any aspects that are causing particular concern to markers or students may also be involved.

Students are provided with a summary form to provide feedback on the course, and the timeliness and use of feedback on their academic performance is included in this form.

**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:**

Each module of the course is linked to a specific feedback questionnaire, in which the students report anonymously on the lectures and other teaching given in that module.

Any issues raised in this feedback are the subject of discussion between the course organiser and the students. More important concerns are dealt with as quickly as possible.

In addition, a student representative is appointed, who can approach the course organiser, or other member of the academic team, with concerns at any time. At one Organising Committee Meeting per term, the student representative is invited to present any concerns raised by the students. These concerns are recorded and minuted, together with the results including the information that is fed back to the students, in attempting to meet the concerns raised.

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

Students and supervisors are reminded by the course organiser that they should meet at least twice per term by email.

Students can approach the course organiser directly (or through the course organiser or Senior Tutor) if there are concerns about the tutoring system.

**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:**

- active research programme in molecular and cellular biology as applied to Reproductive & Developmental Biology;
- staff appraisal scheme and institutional staff development courses;
- updating professional knowledge to ensure continued course development.

**22. Regulation of Assessment** (you may find the following link useful when completing this section: <http://www3.imperial.ac.uk/registry/information/academicregulations>)

**a) Assessment Rules and Degree Classification:**

For **postgraduate taught programmes**: The Pass Mark for postgraduate taught courses is 50%. In order to be awarded a result of merit, a candidate must obtain an aggregate mark of 60% or greater; a result of distinction requires an aggregate mark of 70% or greater.

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.

**b) Marking Scheme for postgraduate taught programmes:**

The Pass Mark for all **postgraduate** taught course modules is 50%. Students must pass all elements in order to be awarded a degree.

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

**For postgraduate taught programmes:** A candidate for a Master's degree who is prevented owing to illness or the death of a near relative or other cause judged sufficient by the Graduate Schools from completing at the normal time the examination or Part of the examination for which he/she has entered may, at the discretion of the Examiners,

(a) Enter the examination in those elements in which he/she was not able to be examined on the next occasion when the examination is held in order to complete the examination,

or

(b) be set a special examination in those elements of the examination missed as soon as possible and/or be permitted to submit any work prescribed (e.g. report) at a date specified by the Board of Examiners concerned. The special examination shall be in the same format as specified in the course regulations for the element(s) missed.

Applications, which must be accompanied by a medical certificate or other statement of the grounds on which the application is made, shall be submitted to the Academic Registrar who will submit them to the Board of Examiners.

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

**For postgraduate taught programmes:** Candidates should only be considered for promotion to pass, merit or distinction if their aggregate mark is within 2.5% of the relevant borderline. Nevertheless, candidates whom the Board deems to have exceptional circumstances may be considered for promotion even if their aggregate mark is more than 2.5% from the borderline. In such cases the necessary extra marks should be credited to bring the candidate's aggregate mark into the higher range.

**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 London 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.

First destination data for MSc graduates, showing a high proportion find employment or further postgraduate research training in Reproductive Research, IVF Clinics and related areas.

Independent review of the quality of the educational provision in Medicine by the Quality Assurance Agency subject review process in 2000 achieving an excellent grading of 21 out of a maximum 24 points.

Curriculum Design Content and Organisation	= 3
Teaching Learning and Assessment	= 3
Student Support and Guidance	= 4
Student Progression and Achievement	= 4
Learning Resources	= 4
Quality Management and Enhancement	= 3

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

The graduate School of Life Sciences & Medicine  
(<http://www1.imperial.ac.uk/med/teaching/postgraduate/taughtcourses/reproductivebiology/>).  
The general prospectus for Imperial College London is at: [www.imperial.ac.uk/pgprospectus](http://www.imperial.ac.uk/pgprospectus).