Programme Specification for the MRes in Medical Robotics and Image Guided Intervention

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 http://www.imperial.ac.uk/. 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: RAE (tbc)
4. Name of Final Award (BEng / BSc / MEng etc): MRes
5. Programme Title (e.g. Biochemistry with Management): Medical Robotics and Image Guided Intervention
6. Name of Department / Division: Department of Surgery and Cancer Division of Surgery (lead) /Department of Computing/ Hamlyn Centre for Robotic Surgery Institute of Global Health Innovation
7. Name of Faculty: Medicine (lead)/ Engineering
8. UCAS Code (or other coding system if relevant): NA
9. Relevant QAA Subject Benchmarking Group(s) and/or other external/internal reference points: NA
10. Level(s) of programme within the Framework for Higher Education Qualifications (FHEQ):
    | 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): September 2014
14. Educational aims/objectives of the programme:
    The programme aims/objectives are:
    1. MRes Medical Robotics and Image Guided Intervention
• To provide the participants with a broad general knowledge of the current technology used within clinical work
• To provide an interdisciplinary introduction to the engineering behind surgical technology, robotics and imaging, and encourage participants to work in collaboration with surgeons to develop new technological advances in the field of surgery
• To provide experience in the methodology and principles of conducting research with application to clinical medicine and surgery
• To provide the skills required for the participant to have a successful career within industry, or an academic research position.

15. Programme Learning Outcomes:

1. Knowledge and Understanding

Knowledge and understanding of
A1. the principles and workings of medical robotics, imaging techniques and surgical technology in use in surgery,
A2. the main methods, interventions and applications in current surgical practice, including a knowledge of the anatomy concerned;
A3. device design and research methods, including data acquisition, testing, study design, statistics, clinical outcomes and interpretation;
A4. minimally invasive and optical endoscopic techniques and new applications;
A5. image-guided intervention techniques;
A6. safety issues and ergonomic considerations in robotic and endoscopic equipment design;
A7. detailed knowledge and understanding of the essential facts, concepts, principles and theories relevant to the particular project chosen;
A8. how to write scientific papers, give research presentations, present research to the wider community, and ability to manage research projects.

Teaching/learning methods and strategies
Acquisition of A1 to A6 is through a combination of lectures, tutorials, and group research skills project.
Acquisition of A7 and A8 through the individual, supervised research project and the supplementary lectures given on these topics.
Throughout the course the 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.
Assessment of the knowledge base is through a combination of unseen written examinations (A1-6) and the individual research project report and a viva (A7-A8).

2. Skills and other Attributes

Intellectual Skills
S1. analyse and solve problems related to the implementation of new technology in surgery:
   • using engineering, computational, numerical and analytical tools
   • using an integrated multidisciplinary approach
   • applying professional judgements to balance costs, benefits, safety and social and environmental impact;
S2. integrate and evaluate information;
S3. formulate and test hypotheses using appropriate experimental design and statistical analysis of data;
S4. plan, conduct and write-up a programme of original research.

Teaching/learning methods and strategies
• Intellectual skills, experimental design and statistical skills are developed through the lectures, use of group research skills project and individual project;
Assessment is through unseen written examinations and the individual research project.

**Practical Skills:**

P1. design, plan and execute experiments;
P2. acquire data in the laboratory or clinic using computational acquisition methods where appropriate;
P3. analyse experimental results and determine their strength and validity;
P4. prepare reports;
P5. give presentations;
P6. use the scientific literature effectively;
P7. use computational tools and packages.

**Teaching/learning methods and strategies**

- Intellectual skills, experimental design and statistical skills are developed through the lectures, use of group research skills project and individual project;
- Practical skills are assessed through the individual project report and via feedback given during the group research skills project.

**Transferable Skills:**

T1. communicate effectively through oral presentations, computer processing and presentations, written reports and scientific publications;
T2. apply statistical and modelling skills;
T3. management skills: decision processes, objective criteria, problem definition, project design and evaluation, risk management, teamwork and coordination;
T4. integrate and evaluate information from a variety of sources;
T5. transfer techniques and solutions from one discipline to another;
T6. use Information and Communications Technology;
T7. manage resources and time;
T8. learn independently with open-mindedness and critical enquiry;
T9. learn effectively for the purpose of continuing professional development.

**Teaching/learning methods and strategies**

- Professional skills are developed through the lectures, use of group research skills project and individual project.
- Assessment is through unseen written examinations and the individual research project.

All expectations of the Disability Equality Duty (DED) will be met following advice found at [http://www3.imperial.ac.uk/disabilityadvisoryservice](http://www3.imperial.ac.uk/disabilityadvisoryservice)

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

FHEQ
European Higher Education Area (EHEA)

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

**Year One:**
Term one:
All formal lectures will take place during week 2-7 inclusive of the first term and will provide an interdisciplinary foundation for the research in subsequent projects. The material is divided into five modules, and each module will consist of 16 lectures lasting 50 minutes each plus 8 hours of tutorial/classwork, taught by two or three instructors (each including at least one member of academic staff responsible for the content). The syllabus for the lectures and an illustrative timetable for weeks 2-7 have been included below. Staff will attend the Educational Development Unit SLTP and PCLT courses where appropriate, or the shorter courses in supervising research students, starting teaching for postdocs', communicating knowledge' and assisting with PhD supervision.

As well as the lectures, the students will work on a group research project that will be full time after week seven. This will provide research skills for the main research project in terms two and three, etc. The main project will be assessed by a group oral presentation and Q&A lasting for 30 minutes for each group at the beginning of week 11. Groups will agree a leader and a secretary will keep a log of activity and detail the technical work. The first task will be to produce a detailed design specification for the work which will be used to evaluate the project against in the assessment. Example projects include ‘building an eyetracker’, ‘building a stereoscopic AR console’, ‘design and construction of a tendon driven actuator for surgery’.

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<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>9-9.50 am</td>
<td>Module 1</td>
<td>Module 2</td>
<td>Module 3</td>
<td>Module 4</td>
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<tr>
<td>10-10.50 am</td>
<td>Module 1</td>
<td>Module 2</td>
<td>Module 3</td>
<td>Module 4</td>
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<td>11-12 pm</td>
<td>CW M1</td>
<td>CW M2</td>
<td>CW M3</td>
<td>CW M4</td>
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<td>12-1 pm</td>
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<td>2-3 pm</td>
<td>Module 3</td>
<td>Group research</td>
<td>Module 5</td>
<td>Group research</td>
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<td>3-4 pm</td>
<td>Module 4</td>
<td>skills</td>
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<td>4-5 pm</td>
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<td>project</td>
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Example timetable during first part of term 1.

Module 1: Medical robotics and instrumentation
This module will provide an introduction to the mechanical principles and design of robots. It will also provide an overview of the key technologies and techniques used in robotic surgery.

Module 2: Minimally invasive surgery
This module will provide an introductory level course in the key surgical disciplines at a level that is accessible to engineering and physical sciences masters’ level students.

Module 3: Surgical imaging and optics
Medical imaging is providing an increasingly important role in surgical navigation and medical robotics. The principles behind the imaging methods are relatively complex and this course will provide an overview of the different methods in common use. Most surgical imaging is carried out using light, and the use of optical technology in endoscopy will also be described.

Module 4: Image guided intervention
This module will provide an introduction to image-guided intervention. It will run in parallel to the medical imaging module and will outline the common image processing and analysis methods.

Module 5: Sensing, Perception and Neuroergonomics
An introduction to sensing, perception, navigation, surgical planning, visualisation, simulation and ergonomics.

Term Two and Three:
The main research project will begin at the start of term two and continue to the end of the programme. Students will be given a choice of projects set by members of academic staff (Daniel Elson, Guang-Zhong Yang, Ara Darzi, Fernando Bello, Mikael Sodergren, Daniel Leff, Su-Lin Lee, Benny Lo and any other staff working in an appropriate research area). They will then rank multiple projects from the list and projects will be allocated to optimise the choice of the student group as a whole. The first few months will involve a literature review, which will lead directly to the extended project. It will be possible to change projects after the literature review if particular problems have been identified with a specific student-project pairing during that time. To provide support for students and to provide a control in identifying any problems, project log-books will be inspected during bi-weekly meetings with academic supervisor, and formal intermediate progress reviews will be carried out for all projects (one in March for detailed project specification and research plan, another one in June for detailed progress assessment).

Example projects are:
- Integration of AR toolkit with a system for video tracked recording at frame accuracy
- GPGPU High Speed Tissue Reconstruction
- Soft-tissue Albedo Estimation from Multiple In Vivo Images Surgical Dynamics Classification
- Optical Monitoring of Instrument Tissue Interaction
- Eyetracking in surgery for skills assessment
- Robotic or handheld surgical tool design for specific or general surgery (e.g. cardiac surgery)
- Design of some software/hardware component linking to the eye tracker for a specific task (e.g. controlling a tool, controlling a computer vision algorithm etc)
- Review of existing and investigation or implementation of alternative/new eye tracking approaches and techniques
- Mechatronics projects are more than welcome

Students will be permitted to undertake projects outside of College, in which case two supervisors will be assigned (one at Imperial and one in the host institution, with the Imperial academic acting as the first supervisor and marker). Detailed instructions will be provided to the host to ensure that the requirements of the MRes are met, and in particular, the following controls will be put in place:

- the lead supervisor will be an academic staff of the Hamlyn Centre and take overall responsibility of project supervision;
- the majority (60%) of the project will be carried out within the facilities of the Hamlyn Centre;
- the industrial partner will contribute towards travel costs for field research/validation on company site;

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• while on the company site, bi-weekly online meetings for project update will be held.

To complement the project the students will also be able to continue their interdisciplinary education by

• using the clinical skills lab to get some practical experience in using surgical instruments and surgical simulators (may form part of MIS in term 1)
• attending sessions on professional skills as well as short sessions on other important aspects of academic, industrial and clinical research (presentation skills, patient confidentiality, research governance, writing skills, how to write a grant proposal, safety issues, information search and retrieval strategies and intellectual property etc.)

### ECTS assignment

<table>
<thead>
<tr>
<th>Module</th>
<th>Time allocated</th>
<th>ECTS</th>
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<tbody>
<tr>
<td>Lecture courses (x5)</td>
<td>16 taught hours, 8 classworks, 76 self study, 7.5 exams</td>
<td>20</td>
</tr>
<tr>
<td>Group research skills training</td>
<td>120 lab hours, 40 self study</td>
<td>6</td>
</tr>
<tr>
<td>Research project</td>
<td>37 taught hours, 1480 self study, 2 exam</td>
<td>64</td>
</tr>
</tbody>
</table>

A total of 90 ECTS at 25.7 hours per ECTS, giving a 48 hour week, 48 week year.

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

Pastoral support: At the start of the course all students will attend a one week induction programme for orientation, introduction to library and information technology and safety. At this point an academic from the Division of Surgery or Department of Computing will be assigned to all students to act as an independent contact point for providing pastoral support. This academic will not be involved in teaching the students. The postgraduate tutors in the two departments is an additional point of contact, and the Course Director will also help students with personal problems and may advise on pastoral and academic issues. The students will also have access to the student counsellors on the South Kensington site. There is also a community of postdoctoral researchers and PhD students within the two departments who will be able to provide advice and suggestions on academic and personal matters.

In addition all students will have full access to

• teaching and Learning Support Services, which provide assistance and guidance
• student email and open personal access to academic staff including the Course Director
• the library and e-learning facilities
• computing suites
• College email systems
• English language support
• Ethos leisure centre etc.

The MRes Student Handbook will include a full description of the course.

Besides the formal lectures, group research skills training and extended project, students will have the opportunity to develop various personal and professional skills. These will include sessions that are run as the Graduate School professional skills workshops. In addition, we would like the programme to cover related areas such as presentation skills, patient confidentiality, research governance, writing skills, how to write a grant proposal, safety issues, information search and retrieval strategies and intellectual property, to be given by the academic staff associated with this course. It would be desirable to share these aspects with another MRes course, for instance the MRes in Biomedical Research (to be arranged).
Numerous additional educational seminars are available in the Department of Surgery and Cancer, the Department of Computing and in other departments.

Feedback will be provided following the examinations at the beginning of term two. Continuous feedback will be received throughout the project work from the project supervisor.

19. Criteria for admission:

The minimum qualification for admission is normally an Upper Second Class Honours degree in a Science- or Engineering-based subject from an UK academic institution or a Master's level degree in a similar subject or an equivalent overseas qualification. Occasionally a well qualified student may be admitted with a life sciences or medical degree, subject to demonstration of quantitative/analytical aptitude. Applicants encouraged to visit South Kensington and St Mary's Hospital for a site tour and interview. Offers made to students are initiated by the Course Director or the Course Organiser. Where an applicant has a lesser degree qualification but has at least three years relevant work experience, a special case for admission may be submitted to the Graduate School and Medicine by the Course Director.

All applicants must satisfy the College’s English proficiency requirement.

20. Processes used to select students:

Students are selected on the basis of their academic qualifications, relevant industrial or other experience and academic references.

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’s Postgraduate Quality 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.

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 and Enhancement Committee (QAEC) is the main forum for discussion of QA policy and the regulation of degree programmes at College level. QAEC 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. QAEC 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 and Graduate School Master’s Quality Committee is 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 Master’s Quality Committee receives regular reports from the Departmental Teaching Committees.

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:

Students will be given prompt written feedback via email after the set of exams in January. The feedback will consist of the grade for each exam plus overall examiners’ comments.

Students will also have continuous feedback from their project supervisor throughout the extended project. At the end of the year, students will receive verbal feedback on their project presentation and viva, and their overall performance on the course, including the recommendations of the Board of Examiners. These processes are monitored through the student feedback processes (see (d) below) and through the course management committee and other College quality control procedures (e.g. biannual quality review).

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:

Student feedback will be obtained via student representatives on the staff-student committee which meets once per term and meetings are minuted. This committee will consist of the course director, one other member of academic staff (preferably one of the programme chairs) and two elected student representatives. Questionnaires will be provided for each course and students will receive a commentary on their responses. Course organisers and staff will also meet with students on a weekly basis and request feedback from students both as a class and individually. Course organisers are always available to meet with students on a one to one basis to discuss areas of individual concern.

Students will receive formative and summative feedback via the examinations and project work as well as class discussions during the classworks.

External examiners will request feedback from students after the final viva and report these views in the external examiners report. Each student will also anonymously complete a feedback questionnaire at the end of the year. The process will be run within the standard e-learning environment (Blackboard) and results will be collated and made available to the Course Organisers to inform changes to the next year of the course. Students will be informed of the actions taken as a result of feedback at weekly core sessions and via email as appropriate.

e) Mechanisms for monitoring the effectiveness of the personal tutoring system:
The performance of the personal tutoring system is monitored via the mechanisms listed above in (d).

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:**

The Educational Development Unit runs a number of relevant courses to this proposal including:

- Supporting Learning and Teaching Programme (SLTP)
- Postgraduate Certificate in Learning and Teaching (PCLT) is available to many staff.
- Short workshops and courses such as supervising research students, becoming a personal tutor, communicating knowledge, etc. for those not eligible for PCLT.

22. **Regulation of Assessment**

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

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:**

There will be two assessed components of the MRes: the written exams and group research skills project (30%) and the individual project (70%).

Three exam sessions will take place during weeks one and two of term two containing material from each of the five core modules, each examined for 1.5 hours and split into two parts consisting of compulsory and optional questions for each module). The minimum pass mark will be 40% for each of these and an average of 50%, and a pass mark must be obtained for all exams to be awarded the MRes degree. Students are required to answer four compulsory questions (50% of the total mark for each exam) and a choice of one question out of two. These examinations (except MIS) will consist of short descriptive textual questions as well as problems, calculations and data interpretation questions, in common with typical exams in engineering and the physical sciences. The clinical Minimally Invasive Surgery questions will require short textual answers and short essays with illustrations to describe various types of intervention.

The group research project will be assessed by 30 minute oral presentation at the end of term 1, which will include 10 minutes of questions and answers. The groups will provide a system specification against which the project will be evaluated by a team of two assessors. The group project will carry the same number of marks as one of the exam papers. In general, all students in the group will receive the same mark, however, the supervisor can provide different marks to each student provided a clear justification is made. This will mitigate issues of a top-performing students is
dragged down by a poor performing group, and a poor-performing student is tagged along behind others.

The clinical case studies and surgical skills sections will be assessed by a brief test which will be pass or fail.

The individual project will be assessed by marking of a written dissertation (typically 12000-15000 words with a maximum of 20000 words) and an oral examination, and the final mark is a weighted average of the oral presentation and the written report (weighting 1:4).

The clinical case studies and surgical skills workshops will be assessed by a brief test to check attendance and a basic understanding of this component of the course.

In order to be awarded a result of merit, a candidate must obtain an aggregate mark of 60 per cent or greater; a result of distinction requires an aggregate mark of 70% or greater.

The ECTS credits have been assigned according to the number of hours spent on each aspect of the course and are divided into two elements: the project, and everything else (lectures, group research skills training, clinical skills and surgical skills).

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<thead>
<tr>
<th>Activity</th>
<th>Total marks</th>
<th>Written examination</th>
<th>Written report</th>
<th>Oral presentation</th>
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<tbody>
<tr>
<td>Lecture courses</td>
<td>25%</td>
<td>25%</td>
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<tr>
<td>Group research project</td>
<td>5%</td>
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<td>5%</td>
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<tr>
<td>Clinical skills/ case studies</td>
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<tr>
<td>Transferable skills</td>
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<tr>
<td>Research project</td>
<td>70%</td>
<td></td>
<td>56%</td>
<td>14%</td>
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<tr>
<td>Total</td>
<td>100%</td>
<td>25%</td>
<td>56%</td>
<td>19%</td>
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</table>

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

A candidate who is prevented owing to illness or the death of a near relative or other cause judged sufficient by the Graduate School 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:**

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 Provost 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:

Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards as outlined above.

Committees with responsibility for monitoring and evaluating quality and standards
- MRes Staff-Student Committee.
- Course Committee.
- Board of Examiners – will meet in September to consider awards.
- Divisional Teaching Committee.
- Graduate School, Master’s Quality Committee.
- Imperial College, Quality Assurance and Enhancement Committee (QAEC).
- Imperial College, Senate

Mechanisms for gaining student feedback on the quality of teaching and their learning experience as outlined above.

Staff development priorities include:
- active research programme in surgical robotics and image guided intervention;
- staff appraisal scheme and institutional staff development courses;
- college Teaching Development Grant Scheme to fund the development of new teaching and appraisal methods;
- updating professional and IT/computing developments.

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

- MRes in Robotic Surgery Handbook;
- MRes webpage on the Division of Surgery website;
- Imperial webpage in the postgraduate prospectus.