

## Regulations for the award of the Doctor in Engineering (EngD)

### NON DESTRUCTIVE EVALUATION

#### 1 Admission and Registration

The normal minimum entrance requirement for registration for the EngD degree is:

- (a) a Second Class Honours integrated Master's degree of a UK university or an overseas qualification of an equivalent standard obtained after a programme of study extending over not less than four years in a university (or educational institution of university rank), in a subject appropriate to that of the programme to be followed;

or

- (b) a Second Class Honours Bachelor's degree of a UK university or an overseas qualification of an equivalent standard obtained after a programme of study extending over not less than three years in a university (or educational institution of university rank), in a subject appropriate to that of the programme to be followed;

or

- (c) a Postgraduate Taught degree of a UK University or an overseas qualification of equivalent standard obtained after a programme of study extending over not less than one year in a subject appropriate to the programme to be followed;

or

- (d) a professional or other qualification obtained by written examinations and approved by the College as an appropriate entrance qualification for the EngD degree.

1.2 Applicants possessing alternative qualifications may also be considered by the College.

1.3 The College may register for the EngD degree with exemption from part of the programme of study a person who has completed a programme of study for a research degree elsewhere in the UK, where that programme of study is deemed equivalent to that provided at Imperial College.

1.4 An applicant for registration may be required to pass a qualifying examination (see Section 2) and may also be required to meet additional qualifications for admission as determined by the College.

1.5 English language and other tests may be prescribed by the College.

1.6 Every applicant must make application to the College in accordance with the procedure prescribed by the College.

## **2 Qualifying Examinations**

- 2.1 A student who is required to satisfy qualifying conditions before being eligible to proceed to the EngD degree may, at the discretion of the College, be permitted to register before these conditions are satisfied.
- 2.2 Except with the special permission of the College a candidate who fails to pass any qualifying examination prescribed will not be permitted to re-enter for the qualifying examination; if re-entry to the qualifying examination is permitted, a candidate will be limited to one re-entry.

## **3 Curriculum**

- 3.1 The programme of study for the EngD degree in the field of Non-Destructive Evaluation shall largely be based in industry and includes formally taught elements which provide academic underpinning for the research undertaken.
- 3.2 The duration of the programme of study is four calendar years.
- 3.3 Candidates are required to complete NDE and related course modules, the Professional Development course modules and two courses chosen from the Optional courses.
- 3.4 Candidates are required to undertake, under the supervision of an academic and an industrial supervisor, substantial research work on which they will be assessed by a report at the end of one year and by a thesis at the end of four years, i.e. at the end of the programme.
- 3.5 The industrial setting of the research means that the candidates may work on a series of linked projects; however taken as whole the projects must demonstrate that the candidate has made a contribution to knowledge.
- 3.6 The candidate shall provide to the supervisors progress reports every six months. These will comprise part of the final assessment [see 4.3 below].

## **4 Assessment**

### **4.1 Formally taught elements**

- 4.1.1 The formal taught part of the EngD programme comprises three elements which provide (a) the underlying fundamental skills for research studies in non-destructive evaluation, (b) the methodology for the translation of such skills into real engineering outcomes, (c) skills underlying the management and delivery of a research programme and (d) evidence of original research via a thesis.
- 4.1.2 Most of the taught programme is expected to be completed in the first two years of study and assessments shall be by written examination or coursework, as prescribed for each individual module.
- 4.1.3 All assessments will be evaluated by a Board of examiners which shall include examiners external to the College. A candidate failing any assessment (whether by written paper or by coursework) will be permitted to re-enter the examination for the module in question on one occasion only.

4.1.4 The award of the EngD will be in part dependent upon the candidate having passed all the compulsory modules and the requisite number of optional modules.

## **4.2 Report**

4.2.1 A report not exceeding 10,000 words shall be submitted for examination at the end of the first year of the programme. The report will reflect on progress to date and define the end goals and time scales of the four year EngD degree.

4.2.2 The candidate will be orally examined on the report by a team consisting of an internal examiner and an academic examiner external to the College; the academic supervisor and the industrial supervisor may attend as observers.

4.2.3 The purpose of the examination is to confirm that the candidate

- a) understands the problem;
- b) is aware of the associated literature;
- c) has demonstrated capability to conduct the research;
- d) has a realistic research plan and schedule;
- e) is of EngD calibre;
- f) has benefited from the taught programme and is able to apply the knowledge acquired from the taught material.

4.2.4 The examiners will assess the progress towards the EngD degree and may recommend continuation, remedial action, which if satisfactorily achieved shall lead to continuation, or withdrawal.

4.2.5 Where a candidate chooses or is requested to withdraw from the EngD programme, that candidate may be eligible for the award of the MPhil in Non-Destructive Evaluation providing all the requirements for that degree have been successfully achieved.

## **4.3 Thesis**

4.3.1 The final assessment of a candidate's research shall be by thesis. The six monthly progress reports will also be available to the examiners on request. As well as describing the research carried out, the thesis must put the work in context, highlighting the original contribution made, shown by the discovery of new facts and/or exercise of independent critical power.

4.3.2 Assessment of the thesis shall be by viva voce given by one internal examiner and two examiners external to the College: one of the latter shall be an industrialist. Arrangements and criteria for these appointments will follow those of the PhD degree. 'External' in the case of the industrial examiner will mean from a different organisation or substantively different part of an organisation, such that he/she is able to exercise their judgement of the work without being swayed by other constraints.

4.3.3 Arrangements for the conduct of the examination will be those for the PhD examination.

4.3.4 Requirements for the award of the EngD will be those applying to the PhD, augmented by the requirement that the candidate demonstrates a clear appreciation of the industrial context and significance of their research.

4.3.5 Recommendations available to the examiners will be the same as those available to PhD examiners (with EngD replacing PhD) including the option of the MPhil in cases where the standards required for EngD have not been achieved.

#### **4.4 Dates of Assessment and Final Examination**

4.4.1 Modules for the taught part of the programme will be assessed by the methods and at the dates indicated for the module in question.

4.4.2 Submission of the report shall be by the end of the first year of the programme.

4.4.3 Submission of the thesis shall be by the end of the final year of the programme or normally within a calendar year of the date of completion of the programme of study.

### **5 Diploma of the Imperial College**

5.1 The Diploma of the Imperial College shall be awarded to candidates who successfully achieve either the EngD degree or the MPhil degree in Non-Destructive Evaluation.

## **NUCLEAR ENGINEERING**

### **1 Admission and Registration**

1.1 The normal minimum entrance requirement for registration for the EngD degree is:-

(a) an Upper Second Class Honours integrated Master's degree of a UK university or an overseas qualification of an equivalent standard obtained after a programme of study extending over not less than four years in a university (or educational institution of university rank), in a subject appropriate to that of the programme to be followed;

or

(b) an Upper Second Class Honours Bachelor's degree of a UK university or an overseas qualification of an equivalent standard obtained after a programme of study extending over not less than three years in a university (or educational institution of university rank), in a subject appropriate to that of the programme to be followed;

or

(c) a Postgraduate Taught degree of a UK University or an overseas qualification of equivalent standard obtained after a programme of study extending over not less than one year in a subject appropriate to the programme to be followed;

or

- (d) a professional or other qualification obtained by written examinations and approved by the College as an appropriate entrance qualification for the EngD degree.

- 1.2 Applicants possessing alternative qualifications may also be registered by the College.
- 1.3 The College may register for the EngD degree with exemption from part of the programme of study a person who has completed a programme of study for a research degree elsewhere in the UK, where that programme of study is deemed equivalent to that provided at Imperial College.
- 1.4 An applicant for registration may be required to pass a qualifying examination (see Section 2) and may also be required to meet additional qualifications for admission as determined by the College.
- 1.5 English language and other requirements will reflect those of the PhD.
- 1.6 Every applicant must make application to the College in accordance with the procedure prescribed by the College.
- 1.7 Students already registered for a PhD may transfer to EngD registration within 12 months of registering and will be required to complete the 'taught' part of the EngD programme within 36 months rather than 24.
- 1.8 Initial registration will be for the MPhil degree. Transfer to the EngD degree will take place at the end of 24 months. The transfer examination arrangements will be those normally employed in Departments for the transfer from MPhil to PhD. On failure in this transfer examination process, the student will be allowed to submit their work for the MPhil degree under the usual MPhil regulations.

## **2 Qualifying Examinations**

- 2.1 A student who is required to satisfy qualifying conditions before being eligible to proceed to the EngD degree may, at the discretion of the College, be permitted to register before these conditions are satisfied.
- 2.2 Except with the special permission of the College a candidate who fails to pass any qualifying examination prescribed will not be permitted to re-enter for the qualifying examination; if re-entry to the qualifying examination is permitted, a candidate will be limited to one re-entry.

## **3 Curriculum**

- 3.1 The programme of study for the EngD degree in the field of Nuclear Engineering shall largely be based in industry and includes formally taught elements which provide academic underpinning for the research undertaken.
- 3.2 The duration of the programme of study is four calendar years.

- 3.3 Candidates are required to undertake, under the supervision of an academic and an industrial supervisor, substantial research work on which they will be assessed by a thesis at the end of four years, i.e. at the end of the programme.
- 3.4 The industrial setting of the research means that the candidate may work on a series of linked projects; however taken as a whole the projects must be of a sufficient degree of coherence and of a sufficient level so as to demonstrate that the candidate has made a distinct contribution to knowledge in a particular area.
- 3.5 Any course at a participating university that has been accredited to Master's level by the appropriate procedures of the participating institution will be considered suitable in principle for credit towards the EngD. Exactly which courses are appropriate for individual students, who will be pursuing research over the broad area of nuclear science and engineering, will be a matter for the approval of the academic supervisor, in consultation with the industrial supervisor. An exception to this is that all students will be required to gain a Management Diploma from the University of Manchester.

There will be a requirement that the student pass (at least) modules corresponding to six weeks of full time equivalent study, in addition to gaining the Management Diploma.

- 3.6 Most of the taught programme is expected to be completed in the first two years of study. One of the criteria for transfer from MPhil to EngD will be that the taught element is substantially complete.

#### **4 Assessment**

- 4.1 Arrangements to deal with unsatisfactory performance will be the same as those applying to the PhD.
- 4.2 Formally taught elements will be assessed by whatever mix of examination and coursework formed part of their accreditation process by the providing institution. Repetition of failed modules will be permitted only to the extent that the accreditation of the modules makes provision for this. (Adequate performance in taught elements will have been a requirement for transfer to EngD registration, as stated above.)
- 4.3 The research element will be assessed by thesis and viva voce examination.
- 4.4 The requirements for the submission and availability of theses will be the same as those for the PhD examination.
- 4.5 Three examiners will be appointed: an internal academic, an external academic, and an external industrial examiner. Arrangements and criteria for these appointments will follow those of the PhD degree. 'External' in the case of the industrial examiner will mean from a different organisation or substantively different part of an organisation, such that he/she is able to exercise their judgement of the work without being swayed by other constraints.
- 4.6 Arrangements for the conduct of the examination will be those for the PhD examination.

- 4.7 Requirements for the award of the EngD will be those applying to the PhD, augmented by the requirement that the candidate demonstrates a clear appreciation of the industrial context and significance of his/her research.
- 4.8 Recommendations available to the examiners will be the same as those available to PhD examiners (with EngD replacing PhD), including the option of the MPhil in cases where the standards required for EngD have not been achieved.

## **5 Diploma of the Imperial College**

The Diploma of the Imperial College shall be awarded to candidates who successfully achieve either the EngD degree or the MPhil degree in Nuclear Engineering.

## **WATER ENGINEERING**

### **1 Admission and Registration**

1.1 The normal minimum entrance requirement for registration for the EngD degree is:-

- (a) an Upper Second Class Honours integrated Master's degree of a UK university or an overseas qualification of an equivalent standard obtained after a programme of study extending over not less than four years in a university (or educational institution of university rank), in a subject appropriate to that of the programme to be followed;

or

- (b) an Upper Second Class Honours Bachelor's degree of a UK university or an overseas qualification of an equivalent standard obtained after a programme of study extending over not less than three years in a university (or educational institution of university rank), in a subject appropriate to that of the programme to be followed;

or

- (c) a Postgraduate Taught degree of a UK University or an overseas qualification of equivalent standard obtained after a programme of study extending over not less than one year in a subject appropriate to the programme to be followed;

or

- (d) a professional or other qualification obtained by written examinations and approved by the College as an appropriate entrance qualification for the EngD degree.

1.2 Applicants possessing alternative qualifications may also be registered by the College.

1.3 An applicant for registration may be required to pass a qualifying examination (see Section 2) and may also be required to meet additional qualifications for admission as determined by the College.

- 1.4 English language and other requirements will reflect those of the PhD.
- 1.5 Every applicant must make application to the College in accordance with the procedure prescribed by the College.
- 1.6 Initial registration will be for the MPhil degree. Transfer to the EngD degree will take place at the end of 24 months. The transfer examination arrangements will be those normally employed in Departments for the transfer from MPhil to PhD. On failure in this transfer examination process, the student will be allowed to submit his/her work for the MPhil degree under the usual MPhil regulations.

## **2 Qualifying Examinations**

- 2.1 A student who is required to satisfy qualifying conditions before being eligible to proceed to the EngD degree may, at the discretion of the College, be permitted to register before these conditions are satisfied.
- 2.2 Except with the special permission of the College a candidate who fails to pass any qualifying examination prescribed will not be permitted to re-enter for the qualifying examination; if re-entry to the qualifying examination is permitted, a candidate will be limited to one re-entry.

## **3 Curriculum**

- 3.1 The programme of study for the EngD degree in the field of Water Engineering shall largely be based in industry and includes formally taught elements which provide academic underpinning for the research undertaken.
- 3.2 The duration of the programme of study is four calendar years.
- 3.3 Candidates are required to undertake, under the supervision of an academic and an industrial supervisor, substantial research work on which they will be assessed by a thesis at the end of four years, i.e. at the end of the programme.
- 3.4 The industrial setting of the research means that the candidate may work on a series of linked projects; however taken as a whole the projects must be of a sufficient degree of coherence and of a sufficient level so as to demonstrate that the candidate has made a distinct contribution to knowledge in a particular area.
- 3.5 Candidates are required to take at least two taught technical Master's level elective modules chosen from a list of Master's level modules offered by any of the participating universities before the submission of the thesis. Exactly which modules are appropriate for individual students, who will be pursuing research over the broad area of water science and engineering, will be a matter for the approval of the academic supervisor in consultation with the industrial supervisor.
- 3.6 Candidates are required to take a prescribed number of Graduate School professional skills courses before the submission of the thesis.



## **4 Assessment**

- 4.1 Arrangements to deal with unsatisfactory performance will be the same as those applying to the PhD.
- 4.2 Formally taught elements will be assessed by examination or coursework. Repetition of failed modules will be permitted only to the extent that the accreditation of the modules makes provision for this. Satisfactory performance in the taught elements will be assessed by an Examination Board comprising members of the five consortium universities (Imperial College, Cranfield, Sheffield, Newcastle and Exeter).
- 4.3 The research element will be assessed by thesis and viva voce examination.
- 4.4 Three examiners will be appointed; an internal academic, an external academic, and an external industrial examiner. Arrangements and criteria for these appointments will follow those of the PhD degree. 'External' in the case of the industrial examiner will mean from a different organisation or substantively different part of an organisation, such that they are able to exercise their judgement of the work objectively. 'External' in the case of the academic examiner will normally mean an academic from outside the five-university consortium.
- 4.5 Arrangements for the conduct of examinations will be those for the PhD examination.
- 4.6 Requirements for the award of the EngD will be those applying to the PhD, augmented by the requirement that the candidate demonstrate a clear appreciation of the industrial context and significance of his/her research.
- 4.7 Recommendations available to the examiners will be the same as those available to PhD examiners (with EngD replacing PhD), including the option of the MPhil in cases where the standards required for EngD have not been achieved.

## **5 Diploma of Imperial College**

- 5.1 The Diploma of Imperial College shall be awarded to candidates who successfully achieve either the EngD degree or the MPhil degree in Water Engineering at Imperial College.