



Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin

Ollscoil Átha Cliath | The University of Dublin

School of Physics

Postgraduate Research Student Handbook 2017–2018

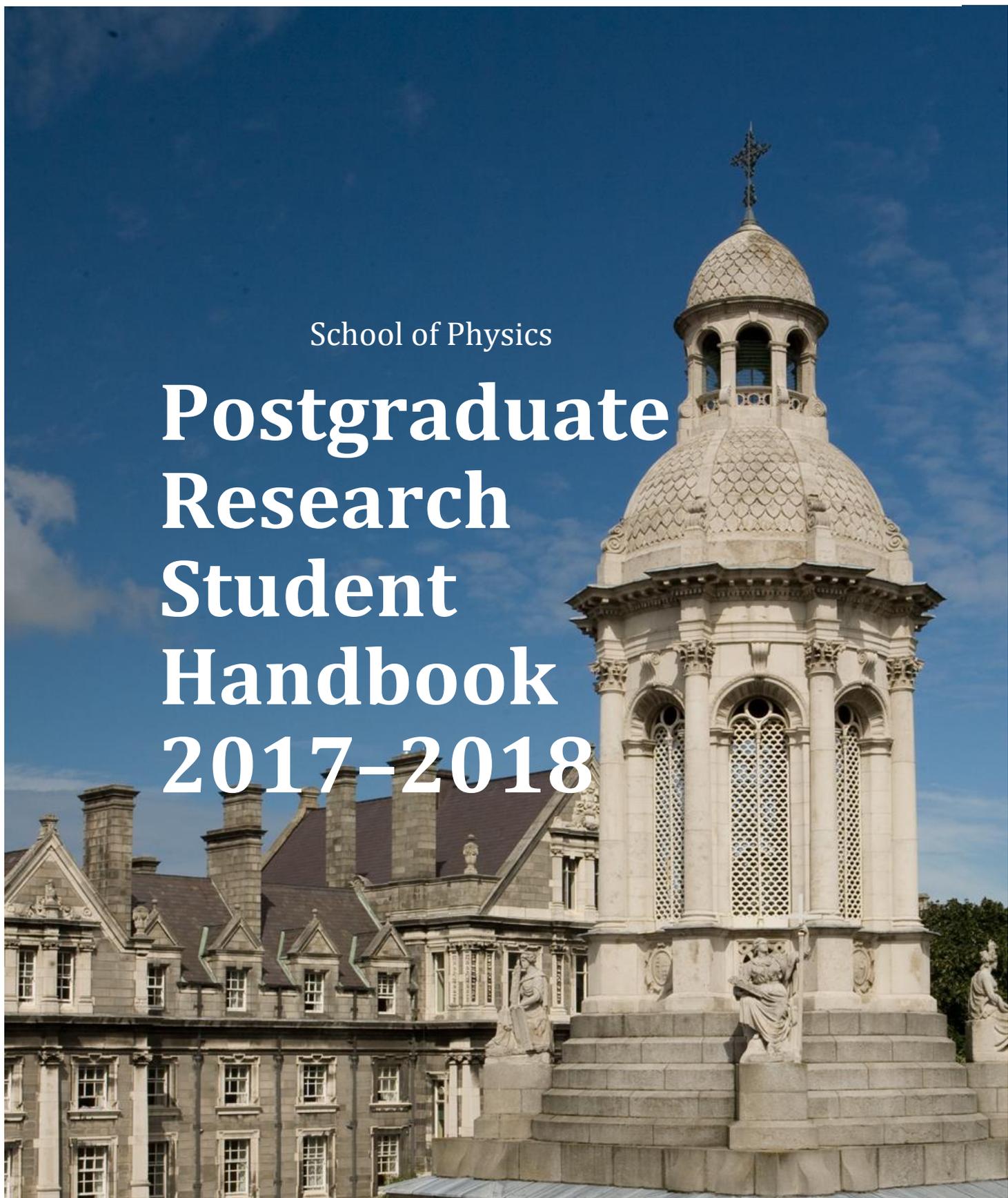


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1. Introduction

The School of Physics in Trinity provides both masters (MSc) and doctoral degrees (PhD), by research. Completing an MSc or a PhD requires that the candidate make an original contribution to knowledge. This makes a research degree a highly individual experience. However, we also aim to provide a structured pathway leading to either an MSc or a PhD. Each research student registered in the School of Physics participates in taught postgraduate (PG) modules that are designed to enhance the candidate's breadth and depth of knowledge, both in their research area, and in related fields. In addition, other programmes (e.g. seminar series) are included to provide experience in scientific presentation and public speaking.

This document describes the structure of the MSc and PhD degree programmes in the School of Physics. It also covers the regulations that apply to all postgraduate research students registered in the School of Physics (including those who carry out their research in other institutes, such as CRANN, DIAS or the Armagh Observatory) during the academic year 2017-2018.

2. General Information

2.1 Starting Your Research Degree

Incoming graduate students officially start on the 1st of September. Postgraduate registration is co-ordinated by the College's Academic Registry. Some students start their research degrees in March when registration is also possible.

2.2 School of Physics Contacts:

Documents, forms and other ongoing announcements associated with graduate student activities are located on the School of Physics Website: <http://www.tcd.ie/Physics/postgraduate/>

The most important contact points are the Director of Teaching and Learning (Postgraduate) (DTLPG) and the Postgraduate (PG) Administrator:

DTLPG	Prof. Mauro Ferreira	ferreirm@tcd.ie	896 3064
PG Administrator	Ms Helen O'Halloran	hohllorn@tcd.ie	896 4141
PG Applications	Ms. Una Dowling	dowlingu@tcd.ie	896 1675

Other useful School of Physics contacts are:

Head of School	Prof Igor Shvets	headphys@tcd.ie	896 1653
Director of Research	Prof. Stefano Sanvito	sanvitos@tcd.ie	8963065
Chief Technical Officer	Mr. Ken Concannon	kconcann@tcd.ie	896 1308
School Administrative Manager	Dr. Colm Stephens	colm.stephens@tcd.ie	896 2024
Financial Administrator	Ms Marie Kinsella	marie.kinsella@tcd.ie	896 1696
School Global Officer	Dr. Niamh McGoldrick	Niamh.McGoldrick@tcd.ie	896 3463

2.3 College Contacts:

The College also provides a number of contact points useful to postgraduate students.

Graduate Studies Office (GSO):

The GSO administers all Masters and Doctorate programmes in the College. It also provides detailed information for graduate students. See http://www.tcd.ie/Graduate_Studies/

Graduate Students Union:

The GSU is an independent body which represents graduate students in Trinity. <http://www.gsu.tcd.ie/>¹

Postgraduate Advisory Service:

The PAS offers a comprehensive range of academic, pastoral and professional support, dedicated to enhancing your student experience. E-mail pgsupp@tcd.ie or see http://www.tcd.ie/Senior_Tutor/postgraduate/ for more details.

2.4 College Regulations:

Regulations for Higher Degrees by Research are contained in the University Calendar Part 3. The University Calendar is available in all College libraries, the School Office and online (<http://www.tcd.ie/calendar/>).

Please refer to the University Calendar for general regulations, governing higher degrees by research only, for information on topics such as:

- Admission requirements
- Probation
- Subject of research
- Role of Director of Teaching and Learning (Postgraduate)
- Progress and continuing registration
- Role of Supervisors
- Attendance
- Part-time registration
- Extension and off-books
- Transfer to/Confirmation on the PhD register
- Procedure for examination of a candidate
- Complaints concerning supervision
- Appeal against the decision of examiners
- Plagiarism.

¹ "Located on the second floor of House Six, the Graduate Students' Union is an independent body within College that represents postgraduate students throughout College. Upon registration, all postgraduates are automatically members. It is run by two full-time sabbatical officers; this year they are the President, Megan Lee, and the Vice-President, Adam Hanna. The Graduate Students Union can advise students on matters such as academic appeals and supervisor relationships. They also help on more personal matters, such as financial concerns, illness and bereavement. Any discussions about such concerns are treated with the strictest confidentiality. They can be contacted at either: president@gsu.tcd.ie, or vicepresident@gsu.tcd.ie."

2.4.1 Plagiarism:

The college has introduced new regulations on plagiarism. Information is available in the college Calendar, PG Calendar Part III, General Regulations, Paragraphs 1.32 and following.

All students are required to **complete the online tutorial 'Ready, Steady, Write'**. The link is given below. In addition students must include a signed cover sheet containing the following **declaration** with all their submitted work, including the **transfer reports and theses**.

I have read and I understand the plagiarism provisions in the General Regulations of the University Calendar for the current year, found at: <http://www.tcd.ie/calendar>.

I have also completed the Online Tutorial on avoiding plagiarism 'Ready, Steady, Write', located at <http://tcd-ie.libguides.com/plagiarism/ready-steady-write>

In order to support students in understanding what plagiarism is and how they can avoid it, college has created an **online central repository** to consolidate all information and resources on plagiarism. Up to now, information has been spread across many sites, which can lead to confusion. Through the provision of a central repository, it is hoped to communicate this information to students in a clearer and more coherent manner. The central repository is being hosted by the Library and is located at <http://tcd-ie.libguides.com/plagiarism>. It includes the following:

- (i) The 2017-18 Calendar entry on plagiarism for undergraduate and postgraduate students;
- (ii) The matrix explaining the different levels of plagiarism outlined in the Calendar entry and the sanctions applied;
- (iii) Information on what plagiarism is and how to avoid it;
- (iv) 'Ready, Steady, Write', an online tutorial on plagiarism which must be completed by all students;
- (v) The text of a declaration which must be inserted into all cover sheets accompanying all assessed course work;
- (vi) Details of software packages that can detect plagiarism, e.g. Turnitin.

3. School of Physics: Information and Regulations

In the School of Physics, the DTLPG oversees the progress of postgraduate students from entry to the point of graduation. Prof. Mauro Ferreira is the current DTLPG in the School of Physics. The DTLPG maintains oversight of the Structured Ph.D. Programme and liaises with the Graduate Studies Office in matters relating to postgraduate education. The DTLPG is assisted by a Postgraduate Administrator, Ms. Helen O'Halloran.

3.1 Structured PhD programme

As per the College regulations, most research students register directly onto the Ph.D. register. This is on a probationary basis and students are required to undergo a formal review process after the first 18 months in order to continue on the register. This process is called a confirmation review. A smaller number of students enter on the M.Sc. register. However, such students may undergo the review procedure mentioned above and if successful, may transfer to the Ph.D. register. Under these circumstances, the review process is called a transfer review. However, the format and requirements are the same in both cases.

3.2 M.Sc. by Research

No specific stipulations beyond the requirements of the University Calendar (Part 3) apply. Students working towards a M.Sc. by research should expect to spend two years carrying out research leading to the submission of a thesis. Students on the M.Sc. register who wish to transfer to the Ph.D. register, with the agreement of their supervisor, must satisfy the requirements of the structured Ph.D. programme (see below).

3.2 Pre-requisites for undergoing a Confirmation/Transfer Review (requirements of the structured Ph.D. programme)

Students participating in the research Ph.D. programme or seeking to transfer to the Ph.D. register must fulfil a set of prerequisites before successfully passing the review process

1. Achieve a pass grade in postgraduate modules contributing to 15 ECTS.
2. Achieve an overall grade of at least 60% across a required number of postgraduate module credits.
3. Achieve a pass grade in the module on Teaching for Physics Postgraduate Learning Assistants.
4. Submit the Annual Progress Report for the first year and any additional full year prior to the review.
(https://www.tcd.ie/Graduate_Studies/currentstudents/admin/progressreports/index.php).
5. Attend the Postgraduate Seminar series.
6. Deliver a seminar at the Postgraduate Seminar series.

3.3. Undergraduate Laboratory Teaching Assistant

All postgraduate students are required to undertake the duties of an Undergraduate Laboratory Teaching Assistant. Students are required to teach up to a maximum of 50 hours of Laboratory Teaching Assignments per academic year. This requirement includes only students in the 1st, 2nd and 3rd years. These activities will be assigned by the School and the students will be informed of their nature and of their respective timetables. Students should report any timetable clash between their teaching assignments and the graduate courses of their choice to the School Administrative

Manager, so that a different arrangement can be put in place. Undergraduate Laboratory Teaching Assistant duties are a component of the compulsory postgraduate module on Teaching for Physics Postgraduate Learning Assistants. Further details on module requirements are given below.

3.4 Postgraduate modules: credit and overall grades

In order to pass the review process (confirmation or transfer), each student must achieve 15 credits within the European Credit Transfer System (ECTS). Of the 15 credits, 5 credits must come from the compulsory module on Teaching for Physics Postgraduate Learning Assistants. To obtain these credits the student must pass the module. To obtain the credits for any other module, the student must attain a grade of 50% in that module. Moreover, for the remaining 10 credits for scientific/technical modules, the *overall grade* across all modules being considered must be at least 60%.

Postgraduate modules from a number of sources can be taken. **Permission must be obtained from the DTLPG for any external modules taken outside Trinity College Dublin.**

1. The School of Physics offers a limited number of 5 credit modules. Some are only offered on a biennial basis (i.e. each module is given only every second year) in Michaelmas Term (October – December). (<https://www.tcd.ie/Physics/study/current/postgraduate/modules/>). Please note that courses will be cancelled if there is insufficient uptake. Students will be notified in advance by email and will have to arrange to take an alternative course.
2. Modules can be taken from other Schools in TCD. For example, a number of students take modules offered by the Dublin Chemistry Graduate Programme (<http://www.dublinchemistry.ie/courses/index.html>) and the Trinity Centre for High Performance Computing (<http://www.tchpc.tcd.ie/support/training>).
3. Modules can be taken from other Universities through programmes such as the Dublin Graduate Physics Programme (<http://dgpp.ie/>), Nanoscale Simulators in Ireland (<http://www.nanoscalesimulators.ie/gradcourses.html>), Irish Geoscience Graduate Programme (IGGP: <http://www.iggp.ie>), Tyndall Institute or Queen's University Belfast. Many of these courses are offered through INSPIRE. The prospectus of courses available to students nationally is at <http://www.flexilearn.ie/img/uploads/Inspire%20prospectus%20Autumn%202016.pdf> Students can express interest by enrolling in courses online via www.flexilearn.ie or through the links in the flyer. For INSPIRE courses funding is available to facilitate mobility as referenced in the prospectus
4. You can propose a directed study module with your supervisor. This is a module of study and assessment that you design personally with your supervisor and is then approved by the DTLPG. The form that has to be completed can be found at <https://www.tcd.ie/Physics/study/current/postgraduate/modules/>. It could be based around studying part of a book or taking an external on-line module. Also permitted for credit is attendance at a summer school with subsequent assessment. Your supervisor can assess the module personally. A full syllabus, module description and details of assessment will have to be presented. The scope of this module is very broad. Proposals must have a clear learning objective, means of assessment and be of an appropriate size for 5 ECTS. A numerical mark must be returned to the PG administrator (Helen O'Halloran) by the module co-ordinator.

Again it is emphasised that permission must be obtained in advance from the DTLPG for any external or direct study module if the student wishes them to be considered for credit towards transfer/continuation on the PhD register. No module can be used to gain credits unless it can be shown that it has been rigorously examined by continuous assessment or examination, or a combination of both.

5. The School of Physics reserves the right to cancel modules due to low demand.

Non-scientific courses such as those offered through the library or the Innovation Academy do not count towards the transfer onto the PhD register or continuation on the PhD register in the School of Physics. However, students are encouraged to avail of these courses and they will appear on their transcript.

The student is free to take more than 15 credits worth of modules if s/he wishes and has the permission of their supervisor. The final grade will be calculated from the scientific modules totalling 10 credits with the highest grades.

The chosen modules must have been taken and the exams concluded before the confirmation/transfer review. In some exceptional circumstances, the report may be submitted before the exams are taken. The interview will not occur until after the final marks are received and student has achieved the required overall grade.

Note that because most modules are not held every year, it will not normally be possible to retake entire modules.

3.4.2 Failure to achieve the required overall grade across modules

A student who has not achieved the required overall grade or obtained a pass grade in the Teaching for Physics Postgraduate Learning Assistants module, as set out in 3.4.1 within 18 months of registration as research student, will not be eligible to participate in the normal round of confirmation/transfer reviews. Under these circumstances, the student will be deemed to have failed the confirmation/transfer review process.

The student may undergo a repeat review 24 months after first registration. However, this will be the student's last opportunity to be reviewed. If the student does not achieve the required overall grade or pass grade in the Teaching for Physics Postgraduate Learning Assistants module or fails the review (see below), the student will be invited to submit a MSc thesis. (See section 3.5.6 for details of the appeals procedure.)

3.4.3 The Postgraduate Seminar Series

The postgraduate seminar series showcases research done within the School of Physics and at CRANN. It is presented mainly by postgraduates for postgraduates (with the occasional external speaker), but all staff and researchers are welcome (and encouraged!) to attend.

All postgraduate students within the School of Physics must give at least one presentation in the seminar series before the transfer to the PhD register, and must attend at least 75% of these seminars. An attendance record is maintained.

3.4.4 The Confirmation/Transfer Procedure

Students must undergo a confirmation/transfer review 18 months after initial registration. This will generally occur in April. However, for a small number of students (ie those who first registered

in March (or those undergoing a repeat review) the review will occur in October.

3.4.5 Purpose of the Confirmation/Transfer Review

The purpose of the confirmation/transfer process is three-fold. Firstly, the candidate must show that s/he has carried out a significant amount of research to date and that s/he is able to defend the results obtained. Secondly, the candidate must show that s/he can write clearly, with due regard for scientific notation and convention. These two elements, the equivalent of a Master Degree, are necessary but not sufficient for a PhD. The third element requires the candidate to demonstrate that the chosen topic warrants a further two years of research and has the clear potential to lead to a PhD. It is also implicit that the supervisor believes that the student is capable of carrying out that further research and that there is access to appropriate facilities.

3.4.6 Structure of the Confirmation/Transfer Review

The review is organized in three stages which are held in the following order:

1. Submission of a written dissertation on the candidate's research
2. An oral presentation of the candidate's research
3. An oral examination/interview

3.4.7 Confirmation/Transfer Dissertation

The transfer dissertation must be submitted before the deadline which will be publicised well in advance. Three copies, spiral bound, must be submitted to the Postgraduate Administrator by the due date (**one each for the DTLPG, Internal Examiner and Supervisor**). Candidates must show a draft of the report to the supervisor well in advance of the deadline.

The dissertation will be read critically by a member of the academic staff appointed by the DTLPG, *the internal examiner*.

Late submissions or amended versions will be accepted only upon a written request signed by the student's supervisor. In any case no amended versions will be accepted after the calendar of the interviews is established. The transfer dissertations must be prepared according to the following guidelines

1. **Language:** the dissertation must be written in good scientific English.
2. **Length:** the dissertation must not be longer than 30 pages (including figures and references but excluding appendices). ***This is a strict limit.***
3. **Font and Spacing:** the dissertation should be in New Times Roman 12pt with 1.5 line spacing or equivalent. Dissertations written in unreasonably small characters will be returned to the candidates without evaluation.
4. **Style:** the dissertation must contain
 - Title
 - Plagiarism declaration
 - Abstract (max. 1 page)
 - Keywords
 - Introduction and overview of the literature (max 10 pages)
 - Methods and Results (max 15 pages)
 - Forward Plan (include Gaant chart or equivalent) (5 page max)
 - References
 - List of Publications and Presentations

5. **References** must be numbered in the order in which they appear in the main text and must have the following format: Authors, Title, Journal, Number, Page, Year.

Example:

W. Kohn and P. Hohenberg, *Inhomogeneous Electron Gas*, Phys. Rev. **136**, B864 (1964).

The Oral Presentation

The student will give a short oral presentation (10 minutes of presentation) on his/her research to the panel of examiners (Internal examiner, DTLPG, supervisor and co-supervisor if applicable). This presentation may be open to the public. The presentation should illustrate the progress of the candidate's research and the future outlook. Therefore this must contain:

- Presentation of the problem
- Work done to date
- Outlook for the future.

3.4.8 Confirmation/Transfer Interview

The student must attend an oral examination (30 mins) as scheduled. The panel of examiners will consist of the internal examiner, the DTLPG and the supervisor (in attendance) and/or, if applicable, the co-supervisor if s/he is officially nominated in the student record. The student will be examined both on basic physics and on the content of his/her dissertation.

On the basis of the oral exam, the panel will decide on one of the following:

1. Proceed to PhD register (without corrections)
2. Re-submit dissertation having made minor corrections (resubmit within one month of confirmation/transfer Interview)
3. Repeat review procedure 6 months later
4. Write up MSc or withdraw.

3.4.9 Failure to Pass Review

Where a student is not successful in their initial confirmation/transfer s/he may apply to repeat the process 6 months later. *However, if the student is unsuccessful a second time, a third attempt will not be allowed.* Under these circumstances, the student will be asked to write up a MSc or withdraw.

As per the University Calendar, a student may appeal the result of a confirmation/transfer interview. This appeal will be brought in the first instance, to an appropriate sub-committee of the School Executive. A further appeal may be directed to the Dean of Graduate Studies, following The University Calendar part 2, Section 1, Paragraph 1.24.5.

3.5 Submission of a Thesis

These are the School of Physics guidelines for submission of MSc and PhD theses, and they must be followed by every registered student in the School. These do not replace the standard proof-reading procedure, which should be a standard practice by the student and his/her supervisor, but have been designed to ensure the standard and the quality of theses submitted for examination.

The college provides detailed guidelines for the preparation of the thesis, https://www.tcd.ie/Graduate_Studies/currentstudents/admin/thesisregs/index.php.

The procedure is the following:

1. Students should express their intention to submit a thesis three (3) months before the intended submission date (typically July or January) by sending an e-mail to the Postgraduate Administrator (Ms Helen O'Halloran, HOHLLORN@tcd.ie).
2. The thesis should be discussed extensively with the supervisor, who must read the entire work prior to submission, and express his/her recommendation to the student. This is a student's right. A student who has concerns that his/her thesis has not been adequately read by the supervisor or who has not received appropriate feedback should contact the DTLPG immediately. The submission of a thesis is ultimately, however, at the discretion of the student who may choose to submit a thesis against or without the advice of the supervisor. However, this final course should be discussed with the DTLPG.
3. A complete draft of the thesis should be submitted to the DTLPG *ten days before the intended submission date*. This draft should be free of typographical errors and in a final form.

The draft will be reviewed by the (DTLPG) and/or a nominated senior member of staff to check that the draft thesis conforms to common scientific practice and to College regulations and guidelines regarding its form (layout, line spacing, font, inclusion of declaration, acknowledgements, abstract, references etc.). The scientific content or worth of the thesis will not be checked and the review does not form part of the examination of the thesis. It is intended to aid the student in preparing a thesis compliant with School and College regulations. After checking the reviewer will express a recommendation to the student:

- to submit the thesis to College,
- to submit the thesis after necessary amendments (the student's responsibility) or
- not to submit the thesis (i.e. defer for serious thesis improvements)

The recommendation will be put on record in the School Office but is not binding (the student may still choose to submit the thesis to the University for examination). However, students should note that refusal to follow this recommendation will be communicated to both internal and external examiners.

4. Thesis should be submitted to the College *Academic Registry Office*.
5. The DTLPG, in consultation with the supervisor, will nominate an Internal and External Examiner. The supervisor will provide a two page CV of the external examiner. This must be submitted to the GSO along with a nomination form. (https://www.tcd.ie/Graduate_Studies/docs/Examiner%20Nomination%20Form%20March%202010.pdf)

3.6 Examination of PhD Thesis

1. The Director of Postgraduate Studies can then nominate a chair for the oral or *viva voce* examination. This Postgraduate Administrator will set a date for the oral examination in consultation with both internal and external examiners and the supervisor and chair. Particular care will be taken to ensure that the examiners have enough time to read the thesis.
2. Examination of a PhD thesis: The examination of a PhD thesis is in three parts
 1. The examiners read the thesis.
 2. The student makes a public presentation (45 minutes) which the examiners (and usually other staff and students from the School) attend. In the presentation the student will present a summary of the research and the main results described in the thesis. There will no questions asked by either the examiners or the audience at the public presentation.
 3. Following the presentation the examiners conduct a face-to-face oral or *viva voce* examination in private with student. The conduct of the *viva* examination (e.g. length of time, number of questions etc.) is a matter for the examiners but typically it takes about two and a half hours.

After the oral examination the examiners will confer and agree a result which is communicated to the Dean of Graduate Studies and DLTPG. The result may be one of the following:

1. Pass the thesis.
2. Pass subject to minor corrections (these are checked by the internal examiner).
3. Thesis to be resubmitted after major revision (after resubmission both examiners will re-examine the thesis and may call the student for a further oral examination). Resubmission is only allowed once.
4. Pass the thesis for the award of a MSc degree (subject to minor corrections if necessary).
5. Fail

3.7 Examination of an MSc Thesis

1. After the examiners have read the thesis they confer and agree a proposed result which may be one of the following:
 1. Pass the thesis.
 2. Pass subject to minor corrections (these are checked by the internal examiner).
 3. Thesis to be resubmitted after major revision (after resubmission both examiners will re-examine the thesis). Resubmission is only allowed once.
 4. Fail.
2. Normally a MSc thesis is examined without an oral or *viva voce* examination. However, an oral examination will be held if either examiner or the DLTPG requests one or the result proposed by the examiners is fail or resubmission after major revision. If an oral examination is held it will be organised and run on similar lines to a PhD *viva* as described above. However, there will be no public presentation by the student.
3. The examiners confer and agree a result which is communicated to the Dean of Graduate Studies and DLTPG of the result of the examination.

Limits on duration of research student registration

The University Calendar provides that full-time students, by default, submit their theses after a maximum of two years (M.Sc.) or four years (Ph.D.) after first registering for a research degree. The default regulation is that extensions are not allowed. However, if a supervisor supports the call for an exception for a student, the DTLPG may then provide a strong recommendation to the Dean of Graduate Studies to allow an extension. It can be noted that students are granted one month of Dean's Grace. Therefore, students who started their PhD on 1st September and would be due to submit by 31st August and have an end date of 30th September on their portal and student cards.

4 Appeals

Appeals of decisions by the DLTPG may be taken to the College Postgraduate Appeals Committee; this is composed of a subset of the College Postgraduate Teaching and Learning Committee that omits the DLTP from the appellant's school.

Appeals of School-level decisions may be taken to the Dean of Graduate Studies. Appeals of the School Research Ethics committee may be taken to the College Ethics review body. At any level of appeal, the Appeal Committee may decline to hear the appeal. College regulations on appeals of postgraduate matters are outlined in the University Calendar Part 3.

5 Disclaimer

The information contained in this document is intended to provide a guide to those seeking admission to the programme, and to current students. Trinity College Dublin reserves the right to update or change syllabi, timetables, or other aspects of the programme at any time. Changes will be notified to current students by e-mail.

The full regulations concerning postgraduate students and the conduct of research degrees and their examination are contained in the University Calendar Part 3. The calendar is online (<http://www.tcd.ie/calendar/>). Where there is any conflict between the University Calendar and this handbook, the Calendar shall take precedence.

Updated: September 2017

Prof. Mauro Ferreira
Director of Teaching and Learning (Postgraduate)
School of Physics.