Faculty of Science + Engineering

Science + Engineering Structured PhD

Handbook

Forward

To UL students and staff members,

The purpose of this handbook is to provide assistance and information to members of the campus community concerned with the Science + Engineering (S+E) Structured PhD. It is designed to be a "one-stop-shop" to easily find out how the S+E Structured PhD works, including operational issues such as programme structure, registering for modules, duration of programme and progression, and academic issues such as educational principles, learning outcomes and others.

The S+E Structured PhD is one of a number of PhD models available at UL, and nominally runs for four years. A number of national funding agencies, including Science Foundation Ireland (www.sfi.ie) and the Irish Research Council (www.research.ie) fully fund Structured PhD's for a full four years, including stipend and fees, and so is an attractive option for both the Student and the research project.

This document outlines a list of "pre-approved" specialised modules and a Certificate in Generic and Transferrable Research Skills, both of which are designed to help the student and supervisor pick an appropriate, and indeed efficient, path to the taught element of the structured PhD programme. The "research" part of the Structured PhD follows the traditional, or "apprenticeship", model where the research is carried out and assessed through thesis and/or publication.

I wish you the very best over the next four years and hope you find your Structured PhD to be both challenging and rewarding.

Best Wishes,

Conor McCarthy, Assistant Dean - Research, Faculty of Science and Engineering, June 2016.

Introduction

The *Structured PhD Programme in Science and Engineering* (S+E)is a four-year Level 10 Structured PhD, offered by the Faculty of Science and Engineering at the University *of* Limerick (UL). The first registration of students to the programme was in September 2013. The programme consists of two major components, which includes the PhD Research and Thesis (weighted at 270 credits) and the taught element, consisting of 12 credits (minimum) of specialised modules (which can be any Level 8 or 9 modules, taken from within or outside UL) and 18 credits of Generic and Transferrable Skills (again, can be taken from within or outside UL). The Faculty of Science and Engineering offers a significant number of "pre-approved" specialised modules, which have been selected by each of the ten faculty departments as suitable modules for Structured PhD's. In addition, UL's Certificate in Generic and Transferrable Research Skills affords S+E Structured PhD students to obtain their 18 credits of generic and transferrable skills during the summer semester of their first or second year of study.

There are a number of recognised models for doctoral education within Ireland, and are,

- "structured" programmes with taught elements and wider skills training but with emphasis on a major research thesis
- the traditional PhD with a major research thesis, sometimes referred to as the 'apprenticeship model'
- professional doctorates which consists of significant taught elements with emphasis on a minor thesis
- work-based doctorates whereby the student is either based in a company/organisation or spends significant time in a company/organisation with emphasis on a major thesis

This handbook is designed to address the "structured" PhD model listed above only, and to help students, academics and stakeholders to quickly find out how the UL S+E Structured PhD works, including programme structure, registering for modules, duration and progression. The handbook is divided into two parts: Part A is a user-guide to the structured PhD where one can get familiar with the programme quickly, while Part B is dedicated to programme rational, objectives, learning outcomes, and is thus useful as a reference for programme auditors or for future accreditations.

It should be noted that several national funding agencies, including Science Foundation Ireland (www.sfi.ie) and the Irish Research Council (www.research.ie) fully fund Structured PhD's for four years, including stipend and fees. Given that the average finishing time for a PhD at UL is greater than 4.5 Years, opting for a Structured Programme can, thus, clearly provide significant advantages to both the student and the research project.

Part A: User Guide

General Programme Structure

All students registered on the S+E Structured PhD have to acquire 30 credits of taught modules, to consist of a minimum of 18 credits of Generic and Transferable Skills and a minimum of 12 credits of Specialist Modules (chosen from Level 8 or 9 modules). The general programme structure is shown in Table 1. The programme is very flexible in so far as the Specialised modules and Generic and Transferrable skills modules can be garnered from both within or outside UL over the four years of the programme. It is, however, strongly recommended that the specialised modules be taken during the first 18-24 months of the programme, and that student enrols in the Certificate in Generic and Transferrable Research Skills programme, and a typical programme route for this case is shown in Table 2.

Table 1: Programme Structure for the S+E Structured PhD

Semester 1 (30 Credits)	Semester 2 (30 Credits)	Summer (30 Credits)
➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills
Semester 3 (30 Credits)	**Semester 4 (30 Credits)**	**Summer (30 Credits)**
➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills
Semester 5 (30 Credits)	**Semester 6 (30 Credits)**	**Summer (30 Credits)**
➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills
Semester 7 (30 Credits)	**Semester 8 (30 Credits)**	**Summer (30 Credits)**
➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills	➢ Research Work* ➢ Specialised Modules (Level 8 or 9) ➢ Transferable (Research) Skills

*Individual research work under supervision of a designated supervisor and/or Doctoral Studies Panel. "Research work" is taken to include all aspects to the non-taught element, including writing of PhD thesis, journal papers, conference papers and presentations, patens, etc.

Structure PhD Programme Structure (for students enrolling in Certificate in Generic and Transferrable Research Skills)

If students wish to enrol on UL's Certificate in Generic and Transferrable Research Skills programme, then sufficient credits for generic and transferrable skills (i.e. 18 credits) will be garnered during the first or second summer semester of the Structured PhD. In addition, students may wish to also obtain their 12 credits of Specialised modules during the first 18-24 months of the programme (and this is strongly recommended so that the research element becomes the focus towards the latter half of the PhD programme). Hence, a typical programme structure under this route is shown in Table 2.

Table 2: Typical Programme Structure for a Student enrolled in the Certificate in Generic and Transferrable Research Skills

Semester 1	Semester 2	Summer
➢ Research Work* ➢ Specialised Modules (Level 8 or 9)	➢ Research Work* ➢ Specialised Modules (Level 8 or 9)	➢ Research Work* ➢ **Certificate in Generic and Transferrable Research Skills†**
Semester 3	**Semester 4**	**Summer**
➢ Research Work* ➢ Specialised Modules (Level 8 or 9)	➢ Research Work* ➢ Specialised Modules (Level 8 or 9)	➢ Research Work* ➢ **Certificate in Generic and Transferrable Research Skills†**
Semester 5	**Semester 6**	**Summer**
➢ Research Work*	➢ Research Work*	➢ Research Work*
Semester 7	**Semester 8**	**Summer**
➢ Research Work*	➢ Research Work*	➢ Research Work*

*Individual research work under supervision of a designated supervisor and/or Doctoral Studies Panel. "Research work" is taken to include all aspects to the non-taught element, including writing of PhD thesis, journal papers, conference papers and presentations, patents, etc.

† Certificate in Generic and Transferrable Research Skills is take only once (save repeating modules), ideally during the summer semester of Year 1 or 2.

Duration of Structured PhD's

The duration of doctoral education in Ireland is normally 3-4 years. The duration of the S&E Structured PhD is nominally 4 Years.

Certificate in Generic and Transferable Research Skills

UL launched the *Certificate in Generic & Transferrable Research Skills* during the summer semester, 2014. The certificate consists of the following six modules in Generic and Transferrable Research Skills, listed in Table 3, and all are 3 ECTS credits each. For S+E Structured PhD Students the modules are taken on a pass/fail basis. More information can be found at http://www.ul.ie/cpe/node/1051.

Table 3: Modules in the Certificate in Generic & Transferrable Research Skills Programme

Module Code	Module Title	ECTS Credits
ES8002	Research Integrity	3
TL8003	Planning Research And Publication: Planning Research	3
TL8013	Developing Ideas and Arguments: Writing into Academic Communities	3
CM8003	Research Networking: Developing an Academic Profile	3
CS8013	Digital Research Management	3
LA8013	Research Ethics	3

The certificate is run as a summer school, with a residential week during a full week towards the end of May. The student is then required to complete on-line assignments and e-tivities during the rest of the summer semester, according to a typical schedule listed in Table 4.

Table 4: Typical Schedule for *Certificate in Generic & Transferrable Research Skills Programme*

Week 1 (End of May)	Week 2 – 5	Week 6 – 9	Week 10 – 13	Week 14
Residential Week at UL	Digital Research Management	Academic Writing	Research Ethics	Complete and submit all outstanding assignments
	Research Planning & Publication	Communication/ Networking/ Presentation	Research Integrity	

Successful completion of this certificate will fulfil the minimum requirements for the Generic and Transferrable Skills element of the S+E Structured PhD.

Registration protocol for the Certificate in Generic and Transferrable Research Skills

The PhD student must register their interest in the Certificate in Generic and Transferrable Research Skills programme by emailing Continuing & Professional Education (CPE) at UL, who manage the programme. Registration must be completed before the Start of May (normally) and must contain the following information.

1. Confirmation that you wish to enrol on this programme with your student ID;
2. Confirmation of the modules you wish to take from the list of 6 modules (see link http://www.ul.ie/cpe/node/1051);
3. A further email from your supervisor, confirming you're a current structured PhD student and indicating their support for your participation on this programme.

The timetable for a typical residential week is given below. More information can be found at http://www.ul.ie/cpe/node/1051

CERTIFICATE IN GENERIC AND TRANSFERABLE RESEARCH SKILLS
2016 SUMMER SCHOOL
Thursday 26ᵗʰ May – Wednesday 1ˢᵗ June
SCHUMAN BUILDING AND COMPUTER LABS - S204 – Computer Lab & S205 – Lecture Room

CS8013 Digital Research Management Fintan Bracken	CM8003 Research Networking: Developing An Academic Profile Caoilfhionn Ni Bheachain
TL8003 Planning Research & Publication Fintan Bracken	LA8013 Research Ethics Hope Davidson
TL8013 Developing Ideas & Arguments: Writing into Academic Communities Ide O Sullivan	ES8002 Research Integrity Alan Donnelly

Time	Thursday 26ᵗʰ May	Friday 27ᵗʰ May	Monday 30ᵗʰ May	Tuesday 31ˢᵗ. May	Wednesday 1ˢᵗ. June
09:00	Welcome & Introduction (10 mins) (Ann Ledwith) Intro. to SULIS (E. Fitzgerald ITD)	ES8002 Research Integrity (AD)	TL8003 Finding Research Information (FB)	LA8013 Background to Research Ethics (HD)	CS8013 The Importance of Research Data Management (FB)
10.00	Networking CM8003 (C.NiB)			LA8013 Research Design (HD)	
10.45	Break	Break	Break	Break	Break
11.00	CM8003	ES8002	TL8003 Reference Management Using EndNote (FB)	LA8013 Consent & Data Protection (HD)	CS8013 Data Management Planning (FB)
12.00	CM8003	ES8002		LA8013 Research Ethics Committees Funding Applications (HD)	CS8013 (FB)
13.00	Lunch	Lunch	Lunch	Lunch	Lunch
14.00	Writing for Publication TL8013 (I O'S)	Finance (Mary Shire)	Career Support (Elaine Kiely)	Intro. To Bibliometrics TL8003 (FB)	CM8003 (C.NiB)
15.00	TL8013	Grant Writing (Conor McCarthy) (1 hour)	IP (M. Walsh) (1 hour)	Copyright Issues (FB)	
16.00					

Specialised Modules

Students are required to select a minimum of two specialised modules as agreed with the PhD supervisor, which will be valued at a minimum of 12 credits. The purpose of these modules will be to strengthen the student's background in the research area which they have selected for their research PhD. Normally, specialised modules should be picked from fourth year level 8 or Level 9 post-graduate modules. However, a special case can be made to select Level 8 modules from 1st, 2nd or 3rd Year, where it can be demonstrated that the module aligns with, and will benefit, the research. Any 1st, 2nd or 3rd Year Level 8 modules must be approved, in the first instance by the PhD Supervisor, and then validated for synergies with the PhD project by the S+E Structured PhD Course Director.

The S&E faculty offers a significant number of "pre-approved" specialised modules, which have been selected by each of the overarching S+E disciplines as suitable modules for Structured PhD's. These pre-approved modules are listed in Appendix I. A memorandum of understanding has been agreed, where any module on the "pre-approved" list can be taken by any student registered on the S&E Structured PhD from any Department in the faculty. **It should be noted that students are free to take other modules outside of those listed in Appendix I.**

Specialised Modules will be weighted as per academic regulations (normally 6 credits in UL). It is assumed that the taught element, and therefore the Specialised Modules, of the programme should be taken during the first two years of the Structured PhD with academic modules only being taken in years three and four by way of exception, e.g. if the direction of the thesis discloses some deficiency or if other skills are required. Specialised Modules should be taken on a Pass/Fail basis.

Modules taken from Outside UL

External Generic & Transferrable Skills Modules

It is possible to take other Generic & Transferrable Skills modules (not listed in Table 3) from UL or from other institutions once they adhere to the skills identified by the Irish Universities Association's fourth level network of Deans of Graduate Studies as relevant to PhD student education. These skills are, but not limited to, Research skills and awareness, Ethics and social understanding, Communication skills, Personal effectiveness/development and Team-working and leadership. This is not an exhaustive list, and their relevance to students will vary upon experiential learning, disciplinary and professional development needs. All external modules must be approved, in the first instance by the PhD Supervisor, and then validated for quality and credit level by the S+E Structured PhD Course Director.

Modules taken from other institutions will be registered on the module registration form as (see Appendix II for the form),

- GT8301 SEN GENERIC AND TRANSFERABLE SKILLS PORTFOLIO: 3- Credits
- GT8302 SEN GENERIC AND TRANSFERABLE SKILLS PORTFOLIO: 6- Credits
- GT8303 SEN GENERIC AND TRANSFERABLE SKILLS PORTFOLIO: 9- Credits
- GT8304 SEN GENERIC AND TRANSFERABLE SKILLS PORTFOLIO: 12- Credits

These module codes will subsequently appear on the student transcript. It is currently not possible to have external modules (Module Name, credit value) explicitly listed on UL transcripts. Hence, **all**

Structured PhD Students are strongly encouraged to keep a portfolio of the modules they take, and this Portfolio should be available to Programme Auditors or funding agencies.

External Specialised Modules

It is also possible to take any Level 8 or 9 Specialised modules from other Institutions. These modules can currently only be registered as XP Modules and consequently they will only appear as XP Modules on the student's transcript. Hence, **all Structured PhD Students are strongly encouraged to keep a portfolio of the modules they take, and this Portfolio should be available to Programme Auditors or funding agencies.**

All external modules must be approved, in the first instance by the PhD Supervisor, and validated for quality and credit level by the Structured PhD Course Director. It should be noted that a minimum of 12 credits are required for specialised modules in the Structured PhD programme and so where external modules are valued at less than 6 credits more than two modules may be required to reach the 12 credit value. Any problems, or conflicting issues, will be brought forward to the S+E Faculty Research Committee for consideration and resolution.

Module Registration

Students are required to register for all their taught modules. The module registration form is listed in Appendix II and can be downloaded from,

http://www.ul.ie/graduateschool/sites/default/files/docs/Structured%20PhD%20Module%20Registration%20Form.pdf

Once completed this registration form should be returned to Student Academic Administration, during Week 1 of each Semester.

Progression of Structured PhD Students

Progression of a Structured PhD Student will follow the normal UL Research Postgraduate progression protocol (PGR-9 Process), where each Department Research Committee will assess each student's performance at the Annual PGR-9 Meetings (normally held in October/November). The PGR-9 process is outlined in detail in Appendix III.

Repeat Structures for Modules

A student who fails to pass any elements of *Certificate in Generic & Transferrable Research Skills Programme* will have an opportunity to repeat the individual modules (shown in Table 3), or the programme in full, in the following summer.

A student who fails to pass a Specialised module will have an opportunity to repeat according University norms for Level 8 & 9 modules.

Student Transcripts

Student transcripts can be obtained from the S+E Structured PhD Course Director.

Part B: Rationale, Aims and Objectives, Learning Outcomes of the Programme

Rationale

The traditional structure of the PhD in Ireland has been under review with the objective of developing PhD graduates with the necessary skills to develop and manage their careers across a broad range of employment sectors, including academia. As part of the revised model of the PhD, Irish Universities are encouraged to provide more structured support for students. This involves incorporating research, knowledge transfer, inter-disciplinary and generic skills development, empowering the students to make a significant impact in their chosen career to contribute to Ireland's "knowledge society". The skills and awareness identified by the Irish Universities Association's Fourth Level Network of Deans of Graduate Schools include:

- Exhibit knowledge of advances and developments in their fields
- Demonstrate knowledge of research in related fields and disciplines and effectively employ research methodologies
- Critically analyse and synthesise new and complex information from diverse sources
- Formulate and apply solutions to research problems
- Apply principles of ethical conduct of research
- Understand the relevance of researching society and the potential impact of research on individuals and society
- Exercise critical judgement and thinking to create new ways of understanding

A Structured PhD programme is the advancement of knowledge through a high-quality experience of original research which is integrated with professional development. It develops student's research knowledge and transferable skills through a formalised and integrated programme of activities. This programme develops advanced research skills for postgraduate research students in the Science + Engineering Faculty. Specifically, the programme:

- Broadens the educational experience in specified advanced research areas;
- improves the quality of graduate education;
- raises the international research profile of the University and attracts international students;
- develops the research capacity and profile of the Faculty;
- creates stronger links between postgraduate teaching and research.

Further the programme is a response to align with IUA structured research and produce high quality researchers with advanced skills.

Aims and Objectives

The aims and objectives of the programme are to,

- To provide a programme that is academically rigorous to the highest standards of its national and international counterparts;

- To engage students with a range of concepts, methods, theories and knowledge derived from research;
- To educate students to work with a variety of Science/Engineering problems across a variety of context;
- To enable students to develop a thesis that will have the potential to impact on their profession.

The Structured PhD:

- Provides a taught element to the programme to help understanding in areas that may be deemed lacking that would be necessary to perform the research;
- Provides a core programme that will give its graduates research skills that are necessary in an international context;
- Provides specialist disciplinary teaching for its graduates so that they develop research to international standards;
- Develops student skills as active researchers able to engage with their peers through research networks and collaborative international research;
- Develops student skills as autonomous researchers able to evaluate different research problems, select and apply appropriate research tools and methods to these problems and gather an evaluate appropriate evidence for the resolution of research questions;
- Generates student research work that will contribute to the redefinition of existing Science & Engineering knowledge.

Programme Learning Outcomes

Knowledge – breadth & kind:
- Utilise appropriate range of research skills required for thematic investigation in their chosen field of enquiry
- Be able to critically reflect on issues related to theory, policy and praxis at all levels of education

Know-how and Skills – range and selectivity:

- Acquire understanding of a substantial body of knowledge in Science/Engineering and create and interpret new knowledge through individual research
- Acquire an understanding of relevant research methodologies and techniques and their appropriate application within one's research field
- Conduct a doctoral thesis with particular reference to the specified field of knowledge drawing on a wide range of methodological approaches and informed by ethical and professional issues

Competence – Context and Role:

- Support original, independent and critical thinking, and ability to develop theoretical concepts
- Communicate results and potential impact of their own research and innovation to peers by engaging in critical dialogue, exploring potential dissemination approaches

for how the thesis, in whole or in part, might be disseminated to the peer professional community
- Align with IUA structured research and produce high quality researcher with advanced skills

Competence – Learning to Learn:

- Critically investigate their research topic resulting in the creation and interpretation of knowledge which extends the forefront of their discipline through original research
- Show a broad understanding of the context in which research takes place
- Utilise a variety of media for accessing knowledge broadly

Competence – Insight:

- Shows competence as an independent researcher in their discipline and capable of continuing to undertake research at an advanced level, contributing substantially to the development of new techniques, ideas or approaches
- Show confidence in defending their research in terms of the approach adopted, the methodology used, the results obtained and the interpretation of those results

Educational Principles

Taught modules can be taken over the full program, these are of three types:

- Specialised academic modules (taken within years 1 and/or 2). These modules are primarily taught in UL, but a module can also be taken in one of our partner IUA universities and approved level 8 and level 9 modules from NUI Galway.
- Transferable skills modules providing students with techniques necessary to complete their research.
- Any other module/training which the Research supervisor or supervisory team deems appropriate, subject to the approval of the Faculty Research Committee.

The research component of the programme requires the completion and examination of a PhD thesis based on original research and under current University regulations.

ECTS Credits for the S+E Structure PhD

The Module Credit breakdown for all years of the S+E Structured PhD is as listed in Table 5. The following distribution of credits are:

- The Programme total: 270-360
- Thesis is: 270 credits as per regulations
- Subject specific taught modules: (min 12 credits) (Module credits as per academic regulations)
- Transferable and generic skills courses: 18 credits total: (6 Modules - 3 credits each)

Table 5: Module Credit breakdown for all years

Year 1	Autumn	Spring	Summer	Year Totals	Cumulative Total
Research	(12-30)	(12-30)	(12-30)	90	90
Transferable skills	(0-9)	(0-9)	(0-9)		
Taught	(0-12)	(0-12)	(0-12)		
Year 2					
Research	(12-30)	(12-30)	(12-30)	90	180
Transferable skills	(0-9)	(0-9)	(0-9)		
Taught	(0-12)	(0-12)	(0-12)		
Year 3					
Research	(12-30)	(12-30)	(12-30)	90	270
Transferable skills	(0-9)	(0-9)	(0-9)		
Taught	(0-12)	(0-12)	(0-12)		
Year 4					
Research	(12-30)	(12-30)	(12-30)	90	360
Transferable skills	(0-9)	(0-9)	(0-9)		
Taught	(0-12)	(0-12)	(0-12)		

Entry Qualifications

Entry Requirements, Application Procedures and Registration

Applicants applying for admission onto a Structured PhD programme should follow the normal procedures for a postgraduate admission. These are as follows:

- All students applying to the University of Limerick to undertake a structured PhD programme must fulfil the University's admissions requirements and procedures.
- Applicants will be considered formally for admission at the monthly meeting of the Postgraduate Research Committee and processed by the Postgraduate Admissions Office.
- The candidate will be registered on the PhD register in accordance with the regulations specified by UL.
- Students with prior learning can apply to get exemptions from some of the taught material of the structured PhD.

The regulations, policies and codes of practice governing the UL Structured PhD Programme are available at: Website: www.graduateschool.ul.ie

A level 8 bachelor degree at upper second level minimum (2.1) or taught postgraduate degree at upper second level minimum (2.1), or equivalent, from a recognised third level institution. In addition, the candidate is required to submit a research proposal outlining proposed research area. If the Student is funded by IRC, a copy of the proposal is sufficient to replace the research outline. Candidates should be proficient in the use of English for academic purposes, and minimum English language requirements are necessary for student where English is not their 1st language (see http://www.ul.ie/graduateschool/ for more details on minimum language requirements).

Extern Examiners

External examiners for the structured PhD will be appointed using the current University procedures for research degrees.

References

1. IUA - 2006, National qualifications Authority of Ireland National Framework.

Appendix I: Pre-approved list of Specialised Modules

1. Electronic and Computer Engineering

CE4701	Computer Software 1
CE4702	Computer Software 2
ET4121	Laboratory Skills 1
EE4018	Engineering Management
ET4035	Computer Law. Investigation and Ethics.
ET4077	Cloud Computing
CE4706	Software Engineering
ET4132	Introduction to Web & Database Technology
ET4017	Communications Networking Fundamentals

2. Computer Science and Information Systems

CS6021	Foundation of interactive media design
CS4007	Information Society
CS5703	Software Engineering Quality

3. Product Design & Architecture

DM4028 and DM4038
(new modules started in Spring 2015)

Architecture Electives – Advanced Theory

AR4327	Culture Place Environment
AR4347	Design Philosophy
AR4357	Architectural Form and Culture
AR4397	Utopian Studies

Architecture Electives – Advanced Technology

AR4367	Digital Technology
AR4377	Engineering Research
AR4387	Experimental Construction
AR4417	Digital Media and Representation

Architecture Electives – Advanced Practice

AR4337	Urban Design
AR4407*	Architecture Intelligence Unit
AR4000*	Local History and Urban Governance

* Offered as part of the Architecture Summer School

4. Engineering

MT6031	Management Systems Standards
MT6011	Advanced Characterisation Of Materials 1
ME6001	FUNDAMENTALS OF CONTINUUM MECHANICS
ME6062	ADVANCED COMPUTATIONAL FLUID DYNAMICS
ME6071	NON-LINEAR FINITE ELEMENT ANALYSIS
ME6052	FRACTURE MECHANICS

ME6062   ADVANCED COMPUTATIONAL FLUID DYNAMICS
ME6008   MICROFLUIDICS

5. Mathematics and Statistics

MS6011   ADVANCED METHODS I
MS6012   ADVANCED METHODS II
MA6002   MATHEMATICAL GEOSCIENCE
MA6012   MATHEMATICAL BIOLOGY AND PHYSIOLOGY
(suitable only for students with a significant undergraduate mathematics foundation)

6. Chemical Sciences

ER4606   Clean Technology
BC4907   Cell Biochemistry
CH4417   Pharmaceutical Formulation
CH4017   Chemical Nanotechnology

7. Physics

Autumn Semester
PH5041   Condensed Matter Physics 1
PH5094   Nanoscience & Technology 1
PH5102   Optical Fibre and Optoelectronic Systems
PH5093   Physics of Advanced Metrology
PH5091   Physics of Materials

Spring Semester
PH5042   Condensed Matter Physics 2
PH6031   Physics of Medical Instrumentation
PH5095   Nanoscience & Technology 2
PH5092   Semiconductor Processing 2
PH6022   Reporting results in Physical Science

8. Biological Sciences

BY4015   Plant Physiology
FT4355   Advanced Nutrient Metabolism & Health
BY4035   Cellular Biology and Biochemistry
BY4008   Genetics and Molecular Biology
FT4457   Research Trends in Health & Food
ER4708   Biometrics

Appendix II: Structured PhD Programme and Research Student Module(s) Registration Form

UNIVERSITY *of* LIMERICK
OLLSCOIL LUIMNIGH

**Structured PhD Programme and Research
Student Module(s) Registration Form**

Structured PhD and Research Students should ensure that the relevant Generic and Transferable Skills Module, Research Skills Module(s) and Taught Module(s) are recorded on their Student Record. All the module requirements for the Structured PhD programme should be agreed with your supervisor(s) and signed off below. Please refer to explanatory information on page 2.

Name:	Student I.D.:
Programme:	Year (1,2,3,4):
Faculty/Dept.	Date:

Generic & Transferable Skills Module(s): Academic Year_____ Semester_____

Module Code(s)	Module Title(s)	Circle appropriate registration type (Note 1)		
		N	P	G
		N	P	G
		N	P	G
		N	P	G

Research Skills Requirements: Academic Year_____ Semester_____

Module Code(s)	Module Title(s)	Circle appropriate registration type (Note 1)		
		N	P	G
		N	P	G
		N	P	G
		N	P	G

Taught Module Requirements: Academic Year_____ Semester_____

Module Code(s)	Module Title(s)	Circle appropriate registration type (Note 1)		
		N	P	G
		N	P	G
		N	P	G
		N	P	G

Primary Supervisor: _____   Date: _____

Joint Supervisor: _____   Date: _____

Candidate*: _____   Date: _____

Chair of Panel/Course Director/Head of Dept. _____   Date: _____

Note 1: Registration Types

Depending on the requirements of the Structured PhD programme, students can register for the modules in the following ways.

N: Normal – modules required as part of your course must be taken on this basis P:
Pass/Fail – credits given but grade does not affect QCA
G: Audit –   no credits given and doesn't affect QCA, attend classes only and do not sit exams

Generic and Transferable Skills Module(s)

Structured PhD Students and Research students who undertake Generic and Transferable Skills Modules may receive ECTS credits for the courses/seminars or workshops that they successfully undertake during their studies. The number of ECTS credits awarded depending on the number of contact hours and/or associated work that is undertaken. The appropriate amount of ECTS credits awarded on a Pass/Fail basis should be signed off by the Supervisor (s), the Research Review Panel, or the Director of Structured PhD Programme. Please note that there may be a minimum and/or a maximum ECTS credits requirement for Generic and Transferable Skills associated with individual Structured PhD Programmes.

GT8001 AHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**3**	
GT8002 AHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**6**	
GT8003 AHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**9**	
GT8004 AHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**12**	
GT8101 BUS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**3**	
GT8102 BUS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**6**	
GT8103 BUS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**9**	
GT8104 BUS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**12**	
GT8201 EHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**3**	
GT8202 EHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**6**	
GT8203 EHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**9**	
GT8204 EHS	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**12**	
GT8301 SEN	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**3**	
GT8302 SEN	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**6**	
GT8303 SEN	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**9**	
GT8304 SEN	**GENERIC AND TRANSFERABLE SKILLS PORTFOLIO**	**12**	

Research Skills Requirements:

Structured PhD Students and Research students who undertake Research Methods Modules may receive ECTS credits for the courses that they successfully complete during their studies. The number of ECTS credits awarded depends on the Structured PhD Programme being undertaken. The appropriate amount of ECTS credits awarded, normally, on a Pass/Fail basis should be signed off by the Supervisor (s), the Research Review Panel, or the Director of Structured PhD Programme. Please note that there may be a minimum and/or a maximum ECTS credits requirement research skills associated with individual Structured PhD Programmes.

Taught Module Requirements:

Structured PhD Students and Research students who undertake Taught Modules may receive ECTS credits for modules that they successfully complete during their studies. Registration for the appropriate taught modules should be agreed and signed off by the Supervisor (s), the Research Review Panel, or the Director of Structured PhD Programme. Please note that there may be a minimum and/or a maximum ECTS credits requirements associated with individual Structured PhD Programme.

A copy of the completed registration form (Page.1) should be kept in the department office and the original registration form should be returned to the Student Academic Administration Office.

Appendix III: PhD Progression & PGR-9 Form

University academic regulations require that all research student progression be reviewed each year, with the exception of those who have submitted a soft copy of a thesis for examination. The review of the work to date will be carried out by a departmental research review panel towards the end of the calendar year, with the outcome of their decision being recorded on the Research Postgraduate Progression Report form PGR-9, (available from www.graduateschool.ul.ie.).

The format of the review will be defined by the individual departments to suit the subject area, but it will take into account whether the student is registered as full or part time, the length of study, the research work carried out, any taught elements of the research programme undertaken, and any generic and transferable skills training. The progression form will be signed off by the chair of the progression panel, (which consists of the chair, your supervisor and an independent reviewer), and returned to the Student Academic Administration Office. The Research Review Panel will assess the candidate's performance to date and determine the appropriate recommendation. The Panel's recommendation shall be one of the following:

a. The student's research progress is of a sufficiently high standard to warrant continuation on the master's or PhD register as applicable.
b. The student's research progress is of a sufficiently high standard to warrant continuation on the master's or PhD register, as applicable, and an extension to the period of registration within the limits described in section 5.8 is recommended.
c. The student's progress is not satisfactory and the student is required to undertake the Research Confirmation Process.
d. The student's progress is not satisfactory and the student's enrolment on the masters or the PhD register, as applicable, should be discontinued.

In relation to recommendation d. above, if the student completes an exit form, the status will revert to Left own reasons (LOR).   The PGR progression form must be completed and returned to Student Academic Administration prior to the December Academic Council Grading Committee meeting. Postgraduate candidates' overall annual progress shall be signified on the PGR-9 form by one of two letter status grades specified above, i.e.:

G: Research to continue

NG: Research not progressing satisfactorily

Students who are deemed not to be making satisfactory progress will be asked to complete a research confirmation panel as indicated below.

Research Confirmation Panel

As per Academic Regulation 5.6.7 and arising from a decision by a Department Research Review Panel; candidates may be required to complete the Research Confirmation (RC) Panel. The Research Confirmation Panel will consider: (a) the report from the Research Review Panel; (b) a transcript of the student's results in the taught element of the programme, where applicable; (c) a written presentation of the research; and (d) a *viva voce* examination following presentation by the candidate of their research to an open forum attended by a board of members of faculty. There must be clear evidence that the candidate has the innate ability to understand the topic deeply enough and has shown the ability to undertake independent research work successfully appropriate to doctoral level.

1. Composition and role of the Research Confirmation Panel:

Approximately two weeks in advance of the confirmation examination candidates and supervisors are required to complete a nomination of examiners form (PGR-3a). The Research Confirmation Panel will consist of the Head of Department or his/her nominee, who will act as chairperson, and two independent panel members, one nominated by the Head of Department and the other nominated by the Assistant Dean Research. To be appointed, the independent panel members must satisfy the criteria of appointment of supervisor (as per section 5.5).

Where the student undertakes a structured PhD programme, the programme director may act as the independent panel member. The chairperson of the Research Progression Panel will act as the adviser to all research candidates presenting for review. The chairperson, independent panel member or programme director are not precluded from acting as an internal examiner at the examination stage. Furthermore, if the Head of Department is a supervisor of the research student, the Dean of Faculty or his/her nominee will assume the role of Head of Department in acting as chairperson and nominating the independent member to the panel.

Chairperson: The chairperson will normally be a senior faculty member who has supervised a PhD candidate to completion. Their role is to manage the confirmation process, ensuring that the candidate is treated fairly, to provide guidance on the University's academic regulations and practices and communicate the outcome of the examination to the candidate. The chairperson will make sure that all the required documentation is completed and communicate the outcome to the relevant parties.

Examiners: The examiners' role is to ensure that the candidate has demonstrated the capability to undertake a doctoral programme of research successfully.

2. Research Confirmation report: The members of the board should receive the report at least two weeks in advance of an oral viva. The report should **not exceed** 8,000 words, including references/bibliography and should:

(a) Clearly define the research objectives;
(b) Include a critical literature review of the subject area(s) relating to the proposed research;
(c) Demonstrate the originality of the proposed research work, by referring to published material;
(d) Demonstrate an ability to write a report, in accordance with UL thesis specifications;
(e) Report on the research work carried out to date by the candidate; which demonstrates: (i) feasibility of the proposed research work; (ii) the ability of the candidate to carry out the proposed research work;
(f) Contain a work-plan showing the main steps required to complete the research objectives. This does not need to be detailed, but should demonstrate that the candidate understands the steps and risks involved in working towards his/her research objectives.

3. Research Confirmation Presentation: The research must be presented to the examination board and the supervisor(s) may attend as an observer(s). The process will take the following structure:

(a) The candidate will make a presentation for up to thirty minutes of the work described in the confirmation report. In some departments/faculties, this presentation may be held in a public (faculty/university) forum. Where this forum is the custom and practice, this should be applied consistently to all candidates.

(b) After the presentation, an oral examination of the candidate for up to sixty minutes; will be undertaken by the two examiners, with the chair and the supervisor present. This should not take place in a public forum. The Research Confirmation Panel; should last no longer than one hour and thirty minutes.

4. Recommendations: The Research Confirmation Panel may recommend one of the following options based on their determination of whether the candidate's research has the potential to make an original research contribution:

(a) The student's research progress is of a sufficiently high standard to warrant continuation on the Master's or PhD register as applicable.
(b) The student's research progress on the Master's register is of a sufficiently high standard to warrant transfer to the PhD register.
(c) The student's research progress is of a sufficiently high standard to warrant continuation on the Master's or PhD register, as applicable, and an extension to the period of registration within the limits described in section 5.8 is recommended.
(d) The student's research progress is unsatisfactory and the student's enrolment should revert to the Master's Register.
(e) The student's research progress is unsatisfactory and the student's enrolment on the Master's or PhD register, as applicable, should be discontinued.

In relation to recommendation e. above, if the student completes an exit form, the status will revert to Left own reasons (LOR).

5. **Outcome**: Candidate's will be informed of the outcome of the examination by the chairperson of the board on completion of the confirmation process. If successful, the candidate will be informed by the chairperson that the Research Confirmation Panel is not a guarantee that the candidate will be awarded a PhD. Similarly; continuation on the Master's' register is not a guarantee that the candidate will be awarded a Research Master's'. Where a candidate is not satisfied with the outcome of the Research Confirmation Panel review, s/he may appeal the matter to the Head of Department. The appeal must be made within two weeks of the publication of the research review grade. The completed and signed PGR-3a form should be returned to Student Academic Administration.

In the event of a disagreement between the examiners as to the outcome of the Research Confirmation Panel, the chairperson will record that a disagreement has occurred, summarise the nature of the disagreement and suspend the Research Confirmation Panel. The case will be forwarded to the head of department for further action.

Research Progression Appeal Panel

As per Academic Regulation 5.6.9 and arising from the outcome of the Research Confirmation (RC) Panel; where the candidate is not satisfied with the outcome of the Research Confirmation Panel review, s/he may appeal the matter to the Head of Department. The appeal must be made within two weeks of the publication of the Research Confirmation Panel grade.

1. Composition and Role of the Research Progression Appeal Panel:
The Research Progression Appeal Panel will consist of the Dean of Graduate School or his/her nominee, who will act as chairperson, and two independent panel members, one nominated by the Head of Department and the other nominated by the Dean of Graduate School. All members of the panel should satisfy the criteria for appointment as a supervisor (as per section 5.5). The chairperson or independent panel members are not precluded from acting as an internal examiner at the examination stage.

Chairperson: The chairperson will normally be a senior faculty member who has supervised a PhD candidate to completion. Their role is to manage the research progression appeal process, ensuring that the candidate is treated fairly, to provide guidance on the University's academic regulations and practices and communicate the outcome of the examination to the candidate. The chairperson will make sure that all the required documentation is completed and communicate the outcome to the relevant parties.

Examiners: The examiners' role is to ensure that the candidate has demonstrated the capability to undertake a doctoral programme of research successfully.

2. Research Progression Appeal Report: The members of the board should receive the report at least two weeks in advance of an oral viva. The report should not exceed 8,000 words, including references/bibliography and should:

(a) Clearly define the research objectives;
(b) Include a critical literature review of the subject area(s) relating to the proposed research;
(c) Demonstrate the originality of the proposed research work, by referring to published material;
(d) Demonstrate an ability to write a report, in accordance with UL thesis specifications;
(e) Report on the research work carried out to date by the candidate; which demonstrates: (i) feasibility of the proposed research work; (ii) the ability of the candidate to carry out the proposed research work;

(f) Contain a work-plan showing the main steps required to complete the research objectives. This does not need to be detailed, but should demonstrate that the candidate understands the steps and risks involved in working towards his/her research objectives.

3. Research Progression Appeal Presentation: The research must be presented to the examination board and the supervisor(s) may attend as an observer(s). The process will take the following structure:

(a) The candidate will make a presentation for up to thirty minutes of the work described in the confirmation report. In some departments/faculties, this presentation may be held in a public (faculty/university) forum. Where this forum is the custom and practice, this should be applied consistently to all candidates.
(b) After the presentation, an oral examination of the candidate for up to sixty minutes; will be undertaken by the two examiners, with the chair and the supervisor present. This should not take place in a public forum. The Research Progression Appeal Panel should last no longer than one hour and thirty minutes.

4. Recommendations: In a manner similar to the way the Research Confirmation Panel operates, the Research Progression Appeal Panel will assess the candidate's performance to date and decide whether to reject or uphold the appeal. If the appeal is rejected, the original decision of the Research Confirmation Panel is confirmed. If the appeal is upheld, the Research Progression Appeal Panel may recommend one of the following options based on their determination of whether the candidate's research has the potential to make an original research contribution:

Panel's recommendation shall be one of the following:
(a) The student's research progress is of a sufficiently high standard to warrant continuation on the masters or PhD register, as applicable. The student's research progress on the master's register is of a sufficiently high standard to warrant transfer to the PhD register.
(b) The student's research progress is of a sufficiently high standard to warrant continuation on the master's or PhD register as applicable, and an extension to the period of registration within the limits described in section 5.8 is recommended.
(c) The student's research progress is unsatisfactory and the student's enrolment should revert to the Master's Register.

5. **Outcome**: Candidate's will be informed of the outcome of the examination by the chairperson of the board on completion of the appeal process. If successful, the candidate will be informed by the chairperson that the appeal process is not a guarantee that the candidate will be awarded a PhD. Similarly; continuation on the Master's' register is not a guarantee that the candidate will be awarded a Master's'. The completed and signed PGR-3c form should be returned to Student Academic Administration.

In the event of a disagreement between the examiners as to the outcome of the Research Progression Appeal Panel, the chairperson will record that a disagreement has occurred, summarise the nature of the disagreement and suspend the Research Progression Appeal Panel. The case will be forwarded to the head of department for further action.

UNIVERSITY *of* **LIMERICK**
O L L S C O I L   L U I M N I G H

Candidate name: _____ **ID number**: _____

Faculty: _____ **Department**: _____

Programme_____ **Status**_____

Start Date _____ **End date**_____

Supervisor(s) _____ _____

The aforementioned candidate has given a progress report or seminar on their research to a research review panel. The panel agree that the recommendation shall be one of the following:

Please tick as appropriate:

		For office use
The student's research progress is of a sufficiently high standard to warrant continuation on the masters or PhD register as applicable		(G)
The student's progress is not satisfactory and the student is required to undertake the Research Confirmation Process		(NG)

Primary Supervisor: _____ Date: _____

Joint Supervisor: _____ Date: _____

Chair of Panel/Course Director. _____ Date: _____

Head of Department._____ Date: _____

This form may be used by the Research Review Panel(s) within each Department to record the candidate's performance to date and determine the appropriate recommendation. These grades should be submitted by the Head of Department via the on-line grading system for Research Student Progression. In addition, a copy of the completed progression form should be held on file in the Department Office.