



Professional Doctorate in Engineering (PDEng)

-  POSTGRADUATE
-  BLOCK RELEASE
-  NFQ LEVEL 10

WHAT IS A PROFESSIONAL DOCTORATE?

Professional doctorates recognise the existence of research activities which can be described as professional practice. Here the term research is used in an inclusive way to accommodate the range of activities that support original and innovative work in the whole range of academic, professional and technological fields and is not restricted or related solely to a traditional 'scientific method'

The University of Limerick, through Lero – the Irish Software Research Centre, the Department of Design and Manufacturing, the Enterprise Research Centre and the Department of Computer Science & Information Systems are offering a Professional Doctorate in Engineering (PDEng).

HOW IS IT DIFFERENT TO A PhD?

The traditional doctorate, the PhD, programme focuses on preparing candidates for an academic career, and is thus focused on training people to rigorously address scientific problems which can result in a contribution to knowledge that can be published in the peer-reviewed scientific literature.

In contrast, the context for this PDEng programme is the practitioner workplace and the focus is on solving real-world problems faced in the daily work-place. The scope of these problems can be sufficiently large to be addressed in a significant piece of research planned and conducted over a period of time and which can ultimately result in a PDEng award.



Find out more on: WWW.UL.IE/PDENG
pdeng@ul.ie or 061-202111

Professional Doctorate in Engineering

Year 01

AUTUMN	CR
QUALIFIER MODULE	9
SPRING	
RESEARCH WORK	12
RESEARCH METHODS FOR PROFESSIONAL PRACTICE 1	6
DATA STRATEGIES & ANALYSIS TECHNIQUES FOR RESEARCH 1	6
SUMMER	
RESEARCH INTEGRITY	3
RESEARCH ETHICS	3
RESEARCH NETWORKING:DEVELOPING AN ACADEMIC PROFILE	3
PLANNING RESEARCH AND PUBLICATION	3
DEVELOPING IDEAS AND ARGUMENTS	3
DIGITAL RESEARCH MANAGEMENT	3
PROFESSIONAL DOCTORATE REPORT 1	12

Year 02

AUTUMN	
RESEARCH WORK	24
SPRING	
RESEARCH WORK	12
RESEARCH METHODS FOR PROFESSIONAL PRACTICE 2	6
DATA STRATEGIES & ANALYSIS TECHNIQUES FOR RESEARCH 2	6
SUMMER	
RESEARCH WORK	12
RESEARCH IMPACT AND DISSEMINATION	6
PROFESSIONAL DOCTORATE REPORT 2	12

Year 03

AUTUMN	
RESEARCH WORK	30
SPRING	
RESEARCH WORK	15
CONFERENCE/WORKSHOP PAPER	6
SUMMER	
RESEARCH WORK	15
PROFESSIONAL DOCTORATE REPORT 3	12

Year 04

AUTUMN	
RESEARCH WORK	30
SPRING	
RESEARCH WORK	30

SUMMER

GRADUATION

CR credits related to each element.

OUTLINE PROGRAMME STRUCTURE

The programme begins with a qualifier module which assesses the capability of the candidate to construct a research proposal. On successful completion of this module candidates will be enrolled on the PDEng. The programme consists of 270 credits of work. The significant bulk of the credits are allocated to the output of the in-company research, 180 credits. This is delivered as a written dissertation and is the culmination of the programme.

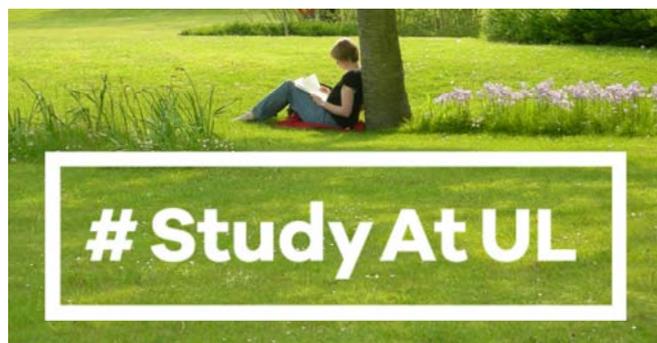
In supporting the development of the dissertation there are 12 modules totalling 54 credits. These modules are delivered mainly in year 1 and 2. At the end of year 1, 2, and 3 a progress report, 36 credits in total, is produced which allows progress to be reviewed and feedback given.

DELIVERY

Delivery will be through a blended learning approach. This will include face-to-face classroom workshops, webinars and moderated discussion boards.

Material will be introduced through expert workshops and learning will be developed through prescribed readings and other activities such as case studies, simulations, online activities, computational problems and other media.

A series of tutor facilitated skills based workshops held for each module at which practical exercises and applications reinforce the learning material studied by participants in the on-line environment. This mode guides participants through material but requires them to deploy the learning in their own organisation through the delivery of an in-company research projects.



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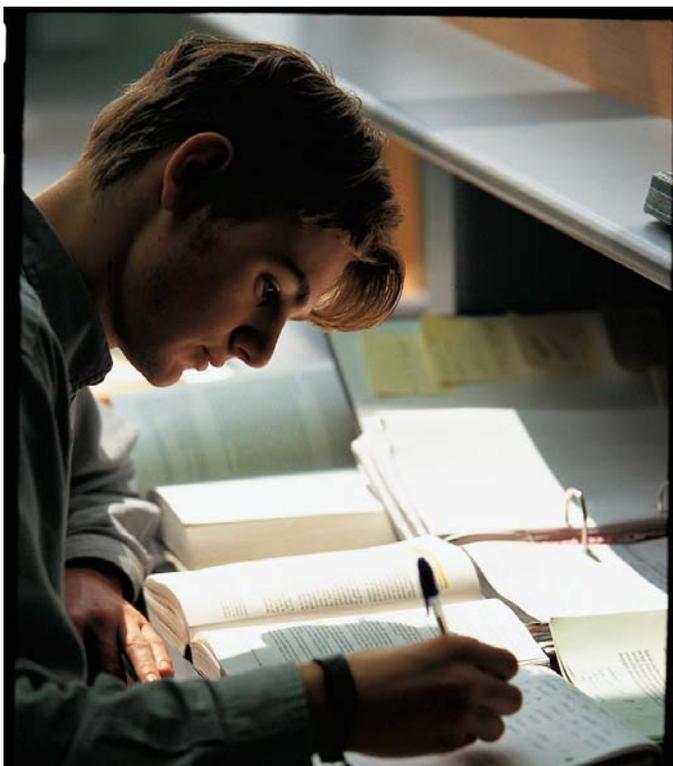
ENTRY REQUIREMENTS

Minimum requirements for a PDEng would typically be a 2.1 honours degree in a relevant area with 5 year experience.

The successful completion of the qualifier (Personal Professional Portfolio) module prior to being offered a place on the programme is also required.

Applicants may be required to attend an interview as part of the application process. Application who do not meet the qualifications requirement but have significant industry experience in a responsible role can be considered under our policy of recognising experiential learning and training.

OUTLINE PROGRAMME CONTENT



RESEARCH WORK (PD.ENG) 1 to 10

The overall aim of the dissertation is to enable you to develop and demonstrate independent research skills, critical thinking skills and to apply these skills to an issue of importance in a relevant area, communicating this in an appropriate manner.

In most cases, as experienced practitioners, you will be in a position to deliver contributions to both the academic community and your industry by conducting research into issues and phenomena that arise in the field of your professional practice.

The dissertation offers you the opportunity to initiate, implement, evaluate and write up a research thesis in an area of your choosing. Through the study of a topic in the field of your professional practice and the application of theoretical knowledge to a practical situation you can advance the body of knowledge in your field.

The dissertation is supported by the modules of the programme and a student's progress is reviewed at the end of each year through the Professional Doctorate report at the end of years 1, 2, & 3.

TAUGHT MODULES:

RESEARCH NETWORKING: DEVELOPING AN ACADEMIC PROFILE

This module provides an understanding of both research profile and reputation, and how both are supported by formal and informal networks. The value of networks and their functions in academic contexts will be explored. Collaboration and social interaction are important elements of the research cycle and this module facilitates students in identifying discipline-specific online and live networks. This module will enable students to develop a personal communications strategy aimed at fostering research reputation.

DIGITAL RESEARCH MANAGEMENT

This module covers a range of Digital based systems covering Digital project management, digital ethics, conferences, seminars and presentations, sourcing & Managing of digital material, developing a digitised academic profile career path strategies using social networking, digital photography sharing & collaborating in digitised research environments.

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RESEARCH INTEGRITY

This module allows students to appreciate the requirement for integrity and ethical practice in research. The module informs students on the European code of conduct for research integrity, and uses examples and discussion of research misconduct to foster good research practice. It informs students of current University procedures on research misconduct, and closely examines issues of appropriate research data and information collection and storage, research authorship and plagiarism.

RESEARCH ETHICS

The aim of the module is to present researchers with an opportunity to examine the ethical complexities which arise in the process of conducting research involving human participants. Participants will learn to identify and analyse ethical issues relating to study design and rationale, consent processes and protection of personal information in the fields of education research, health sciences research and psychology.

PLANNING RESEARCH AND PUBLICATION

This course will take early researchers through the process of planning and managing their research in order to lead to excellent scholarship in their research endeavours. Researchers will develop the cognitive, metacognitive, affective and social skills required to negotiate the early stages of the research and writing process effectively.

DEVELOPING IDEAS AND ARGUMENTS: WRITING INTO ACADEMIC COMMUNITIES

This module picks up where Planning Research and Publication leaves off, extending the framework for writing from the prewriting stage of the writing process to the drafting stage. The purpose of this module is to encourage writers to examine how they use writing to identify and develop their ideas in the process of responding to the ideas of others as they identify and organise their argument.

Additionally, this module examines how context determines both conceptual and formal textual choices and how strategic choices either motivate or stifle a student's progress toward a draft that is both coherent and cogent enough to warrant a move into a more reader-based writing mode, where revision occurs.

RESEARCH METHODS FOR PROFESSIONAL PRACTICE 1 & 2

These modules will set the foundations by covering each of research methodology paradigms in detail, and clarifying exactly when each might be more appropriate.

Describe the context in which research takes place and understand the types of research associated with a professional doctorate such as the PDEng. This will set the foundation for subsequent tailoring of research to the precise organisation context and problem setting.



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DATA STRATEGIES & ANALYSIS TECHNIQUES FOR RESEARCH 1 & 2

These modules will set out the principles of the scientific method and introduce students to the fundamentals of data collection and analysis strategies to support their research methodologies. Through these modules the students will be able to identify the key elements of data collection, the appropriate analysis tool for a given design situation, the key elements and tools to use in the analysis of their research data.

CONFERENCE/WORKSHOP PAPER

Students are required to fully prepare and attend a conference/workshop and present a paper, of approximately 3000 words, ready for publication on the topic of their research. The student will also be required to present the paper to a selected audience. The conference/workshop allows the researcher to present and participate in conferences or workshops which have an established reputation and are appropriate to their research area. Participants will have exposure to other researchers, practitioners, government and/or regulatory authorities and academic institutions. The event will allow peer review of the student's research and also provide exposure to other research ideas and approaches

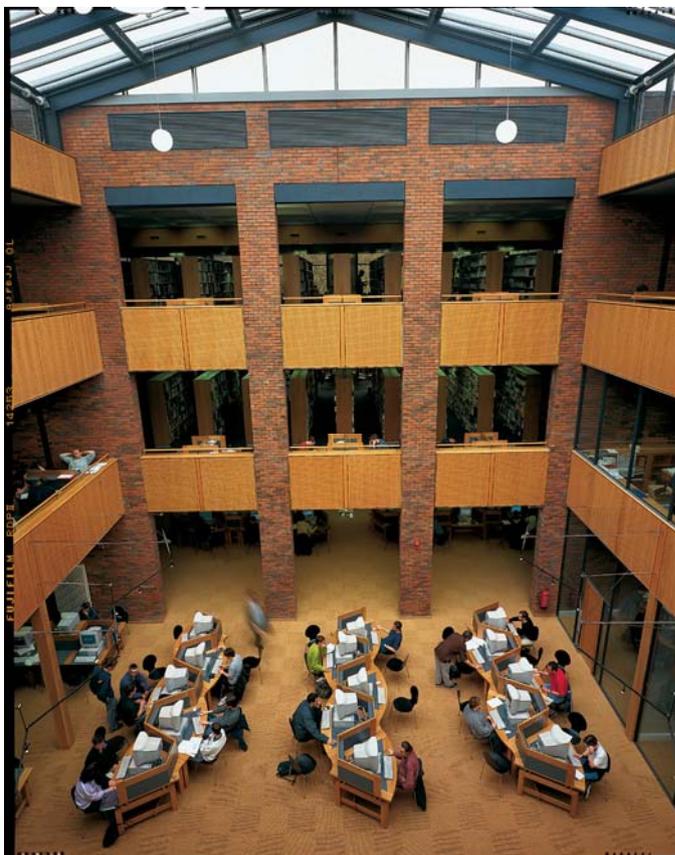
RESEARCH IMPACT AND DISSEMINATION

Subsequent to submission of her/his dissertation, the student prepares a paper of approximately 5,000 words on substantive issues and/or significant findings arising out of her/his doctoral research, paying particular attention to the implications for educational leadership and management. These papers will then be forwarded for consideration to an appropriate research publication to demonstrate student's abilities to apply their learning experiences within their professional settings and to present the outcomes in dissertation format.

PROFESSIONAL DOCTORATE 1, 2, & 3

Through self-directed learning and research within their profession, the student will produce a

substantial document detailing the development of the research project(s) at the end of year 1, 2, & 3 of their studies. It is expected that the student will incorporate the knowledge gained from the previous modules to inform and their own research the submission. The student will be required to present their work to their peers in a discussion group and to a review panel.



PROFESSIONAL RECOGNITION

In developing the programme, UL sought to involve the relevant professional bodies in the design, delivery and assessment of the PDEng award. Such professional bodies include Engineers Ireland, the Irish Computer Society and the Irish Software Association, American Society for Quality, Shingo Institute and Lean Enterprise Academy Association.

CONTACT US

To discuss the programme further contact us on pdeng@ul.ie or 061-202111.

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RESEARCH CENTRE PARTNERS

LERO the Irish software research centre and the enterprise research centre both contribute a specific potential for practitioner research find out a little more about them below.



SOFTWARE POTENTIAL

The Irish software industry represents a very significant component in the economy. Highly export-oriented, it comprises over 1,000 companies (80% of which are indigenous) and generates exports in excess of €70 billion annually. However, much software development also takes place in other sectors such as public sector, financial services, telecommunications, medical devices etc.

The 2011 national census would suggest that well over 100,000 people are in software-related employment. The software industry is very competitive globally with many countries having a significant presence. Skills gaps are frequently cited as an obstacle in the Irish software industry, and the proposed PDEng would help to significantly increase the skill base in Ireland.

Lero has a long track record of supervising industry-based candidates in traditional academic PhD programmes. However, these PhD programmes are more suited to full-time candidates and do not fit well with practitioner candidates who need to maintain a full-time work schedule simultaneously. This Professional Doctorate in Engineering (PDEng) is designed to facilitate people working in software-related work.



ENTERPRISE EXCELLENCE POTENTIAL

In addition to the many indigenous successful exemplars, many of the world's leading enterprises are located in Ireland;

- ◆ 9 of the top 10 global pharmaceutical companies,
- ◆ 9 of the top 10 software companies,
- ◆ 12 of the top 15 medical technology companies,
- ◆ 15 of the top 20 financial services companies,
- ◆ 9 of the top 15 internet companies and
- ◆ 3 of the top 6 games publishers.

Enterprise Excellence programmes in UL have had a positive impact on over 300 participating firms across Ireland and made a significant contribution towards enhancing the skill-base of these organisations. To ensure relevance and appropriateness, a fundamental review of Lean and Six Sigma programmes was undertaken in 2015. The programme evaluation included a review of the structure, content and delivery.

The evaluation was undertaken in the context of UL's commitment to achievement of the highest quality standards in programme design and delivery. An evaluation priority was to ensure that the suite of Lean and Six Sigma programmes continue to be at the leading edge nationally and that the suite of programmes is positioned to compete internationally.

The programme has been developed specifically to enable leaders in Enterprise Excellence who deliver platform, incremental and radical process improvement projects within their organisations.



UNIVERSITY of LIMERICK
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