Graduate Research
University Limerick
Front cover: The Living Bridge, University of Limerick

The 350 metre long pedestrian bridge is one of the most innovative and impressive pieces of architecture on campus. Designed by Wilkinson Eyre Architects, London and built by Eiffel Construction Metallique, the bridge connects the north and south banks of the university campus.

The bridge includes four platforms, which are designed to accommodate social gatherings, informal teaching sessions, music and dance performances as well as a wide array of educational, social and cultural activities.

Photographs: Eoin Stephenson, Rumhann Howard-Hildige
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VICE PRESIDENT’S WELCOME

The University of Limerick (UL) is a young, energetic and enterprising university with a proud record of innovation in education and excellence in research and scholarship.

UL has recently undertaken a strategic review of its research priorities in order to refine the key areas that reflect its competitive advantage. This strategic review has been guided by the promotion of a research ethos characterised by convergent translational research.

During the past year our key research indicators have shown strong growth, with increases in research applications, research income, postgraduate numbers and commercialisation activities complementing the strong gains in research outputs.

UL offers a wide range of research opportunities at masters and PhD levels, thereby contributing to the advancement of our rapidly-evolving knowledge society in the twenty-first century.

Research projects at the university, which include work on combating the spread of MRSA in hospitals, streamlining the production of medicines by the pharmaceutical industry in Ireland, the production of revolutionary vascular grafts and the use of information technology in the automotive industry to combat exhaust emissions, have secured both government and industry research contracts in excess of €40 million.

UL has strong links with industry from undergraduate to postdoctoral level. The university runs one of the largest Cooperative Education programmes in Europe (undergraduate internship), and we have recently celebrated the successes of campus companies Powervation Ltd. and Stokes Bio Ltd. The employment rate of our graduates has always been exceptional. In fact, our 2008 figures show that over 83% of UL postgraduates were employed following graduation.

I hope this brochure will give you an overview of the exciting opportunities open to graduate students at UL and will encourage you to investigate further.

Professor Brian Fitzgerald
Vice President Research
UNIVERSITY
of
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UNIVERSITY OF LIMERICK

The University of Limerick is an independent, internationally focused university with over 11,000 students and 1,313 members of staff. UL offers 73 undergraduate programmes and over 96 taught postgraduate programmes across four faculties. Our postgraduate research students benefit from the experience of international researchers and the availability of state-of-the-art equipment at our research institutes and centres.

Arts, Humanities & Social Sciences
Education & Health Sciences
Kemmy Business School
Science & Engineering

Research

Key research areas at UL include:

• Materials and Surface Science
• Information & Communication Technologies
• BioEngineering & Biosciences
• Energy and Sustainable Environment
• Applied Mathematics
• Study of Knowledge in Society

Other areas under consideration include Work, Employment and Public Policy; Food and Health, Physical Activity and Sport.

We have four internationally recognised research institutes across the university. The four institutes are:

• Materials & Surface Science Institute (MSSI)
• Stokes Institute
• Lero – Irish Software Engineering Research Centre
• Institute for the Study of Knowledge in Society (ISKS)
Achievements

Over the last 12 months we have seen exciting new developments in our research institutes and centres, as follows:

• The Solid State Pharmaceutical Cluster in MSSi has been awarded almost €7 million under the SFI Strategic Research Cluster programme.

• MSSi secured a €5 million technology research contract under EU Framework Programme 7. The aim of the research is to significantly reduce MRSA infection rates in hospitals across the world.

• Lero, the Irish Software Engineering Research Centre, continues to develop technologies for potential commercial exploitation in the Irish software sector.

• Over 800 postgraduate students pursued either research masters or doctoral programmes in AY2008/09.

• UL has signed almost 100 formal agreements with industry partners in 2008 alone. UL continues to lead the university sector in terms of success with industry partners in the EI Innovation Partnership programme.

• Collaboration with private venture capital has led to the development of a number of high-quality campus companies, including Powervation Ltd., Crescent Diagnostics Ltd., Cauwill Technologies Ltd. and Stokes Bio Ltd.
ARTS, HUMANITIES & SOCIAL SCIENCES

With nearly 150 research students enrolled, the Faculty of Arts, Humanities & Social Sciences (AHSS) is enriched by a vigorous and lively postgraduate community. Funding of €2.4 million from the Programme for Research in Third-Level Institutions Cycle 4 (PRTLI 4) has opened up exciting possibilities for PhD students and postdoctoral researchers. Newly developed structured PhDs provide opportunities for students to develop research skills through a combination of coursework and thesis in a thematic area such as gender, culture and identity, social science or applied language studies.

Each discipline within the Faculty of AHSS has a range of research strengths. Many researchers work in interdisciplinary groups. The Institute for the Study of Knowledge in Society (ISKS) began life as a major centre for collaborative research within the faculty and has progressed to becoming a cross-faculty institute providing a range of research support services for researchers in the humanities and social sciences across the university.

Much of the research output of the Department of History has emphasised different aspects of early modern and eighteenth-century Irish history, including warfare, intellectual life, social change and biography. Other well-established research areas within the department include the Weimar Republic and Nazi Germany, Irish diplomatic relations with the United States, history of family, art history and contemporary history.

Several researchers in the School of Languages, Literature, Culture and Communication share eighteenth-century interests with the Department of History and help constitute an eighteenth-century studies research group, which focuses on the development of French thought. Professor Geraldine Sheridan’s work on Voltaire is illustrative. A cluster of researchers have addressed the experiences of German exiles in Ireland. In the Centre for Applied Language Studies led by Professor Angela Chambers, researchers have undertaken internationally authoritative work on language corpora-based discourse analysis. Women’s writing, especially in Ireland, and Irish socio-linguistics represent other major research foci within the school.

Sentencing, the evolution of Irish tort law and the impact of European Union law in Ireland, as well as wider concerns with human rights and constitutional law, form part of the research programme in the School of Law. Professor Dermot Walsh has just completed an Irish Research Council for the Humanities and Social Sciences (IRCHSS)
fellowship in which he examined police reform in the Irish Republic and Northern Ireland.

In the Department of Politics & Public Administration, researchers embrace a diverse range of fields both empirically and methodologically. With a strong combination of nationally and internationally renowned specialists in post-Soviet politics, Southern African politics, Latin American politics, international political economy, contemporary European and EU politics, Irish politics and public policy, international relations theory, feminist analysis, critical theory, public administration and governance, the department retains a strong national and international focus in political studies. The department accommodates the Centre for Peace and Development Studies. In its postgraduate research, the department emphasises methodological training in comparative politics, qualitative research and quantitative analysis.

The Department of Sociology has long been committed to a critical engagement around what broadly constitutes the basis of our social membership, whether gendered, classed or linked to core issues of health, the media, migration, education or globalisation. The department has a strong commitment to and expertise in quantitative and qualitative teaching research methods. Women’s Studies is based in the Department of Sociology. However, the research group is interdisciplinary and its output has clustered around several themes, including ‘Women and global belonging’ and ‘Gender, memory and modernity’.

The Faculty of AHSS includes several interdisciplinary research programmes. One such programme, the Ralahine Centre for Utopian Studies, has an established record of distinctive work on utopian thought, literatures and communities. The centre was founded by Professor Tom Moylan and is currently under the direction of Dr Joachim Fischer and Dr Luke Ashworth.

**New and Growing Areas**

Emerging research fields in which groups of researchers are beginning to generate important work include modern Spanish literature, development studies, masculinities and attitudes to health issues that are related to lifestyle and life cycles. Interdisciplinary research across a range of universities within Ireland and abroad are strengthening and promoting the profile of AHSS.
Funding

As well as PRTLI, another major source of collaborative research funding within the Faculty of AHSS is Atlantic Philanthropies, which has supported PhDs and postdoctoral researchers in Women’s Studies. Irish Aid has recently funded a networking project on social partnerships in sustainable development. Irish Aid has also donated library resources to support research and teaching in development studies at UL. Other major funders of individual researchers and research groups include Combat Poverty, the Health Service Executive (HSE) and a range of government departments. The Faculty of AHSS has a good track record in attaining IRCSSH scholarships to support doctoral and postdoctoral research.

In excess of 100 PhD candidates are registered with the Faculty of AHSS. A dedicated working area and a range of seminars and training facilities, including proposal development workshops, help foster a sense of intellectual community amongst postgraduates.

On the whole, PhD work is undertaken by individual scholars. Within each department, however, clusters of students work within certain fields, thereby enabling them to share experiences and insights. Such discipline clusters include:

### Knowledge Interfaces at ISKS:

- Education, technology and language
- Work mobility in the knowledge economy
- The Irish developmental state
- Media and migration
- Health, lifestyle and policy

### History:

- Twentieth-century Germany
- Twentieth-century Irish republicanism
Language and Cultural Studies:

• Exiles and immigrants in Ireland
• Irish travel writing
• Literature and memory in post-Franco Spain
• Language teaching and acquisition
• Applied language studies
• Irish socio-linguistics

Law:

• Irish human rights Politics and Public Administration:
• Peacekeeping and peacemaking
• Development and democracy
• Foreign aid
• European security
• International organisations
• European Union
• Post-Soviet politics
• Social partnership in Ireland
• The Irish state
• Local government

Sociology:

• Social exclusion
• Gender and inequality
• Health and illness
• Research methods
My name is Stephen Ryan and I’m in my second year of my research in history. I first came to UL over five years ago to study history, politics and social studies and majored in history. I enjoyed the research aspect of my final year project immensely and opted to return to UL to do a research masters in history, which I am currently working on.

The facilities that are available to me as a research student are fantastic. I work from my desk in the postgraduate research area and have my own PC as well as access to printing and photocopying facilities. The library staff and facilities are excellent, and any books I need are generally made available to me either through the library’s own catalogue or through inter-library loans. In my opinion, being a research student can be a very liberating experience. I can work at my own pace, and I have learned to become more self-motivated. The Department of History and my supervisor allow me to take a good degree of control over my own work and help me in every possible way they can.

Being a research student is very rewarding but is also very hard work. Having said that, study by research is undoubtedly the right course for me to have taken.
Angela Chambers is Professor of Applied Languages and Director of the Centre for Applied Language Studies at the University of Limerick and a member of the Irish Research Council for the Humanities and Social Sciences (IRCHSS). Her current research focuses on second language acquisition, in particular on the use of corpus data by language learners. She has co-edited a number of books and published several articles on aspects of language learning, particularly relating to corpora.

Professor Chambers is currently principal investigator of the Knowledge Interfaces Project, for which the Institute for the Study of Knowledge in Society (ISKS) was awarded funding of €2.5 million in 2007 under the HEA’s Programme for Research in Third-Level Institutions Cycle 4 (PRTLI 4). This project is part of the Irish Social Sciences Platform, which brings together eight institutions and 19 disciplines. In ISKS, the project funds 12 PhDs and three postdoctoral research fellows and investigates areas such as language and communication, the sociology of health, and the interaction between technological change and social, cultural and political life. After completing her BA (French and German) and PhD at Queen’s University Belfast, Professor Chambers worked in the universities of Bordeaux and Ulster. She joined UL as senior lecturer in French in 1990 and was appointed to her current post in 2002. In 1998–1999, she was associate professor in the Université de Lille III, France. She is currently a member of the Executive Committee of the European Association for Computer-assisted Language Learning, which has its headquarters in the University of Limerick, and a member of the Editorial Board of the association’s journal, ReCALL, published by Cambridge University Press. In 1998, Professor Chambers was awarded the honour of Chevalier dans l’Ordre des Palmes Académiques, a French government honour awarded for services to the French language and to education.
The Irish World Academy of Music & Dance

The Irish World Academy of Music & Dance was established in 1994 by Professor Mícheál Ó Súilleabháin, whose own research interests established the Academy as the international leader in Irish music research. The Academy has graduated 18 research students since 1994, six of whom currently head up traditional arts programmes in other Irish higher education institutes.

Research at the Irish World Academy encompasses a wide range of areas from ethnomusicology to music and health. Some of the key areas include:

- Ethnomusicology and ethnochoreology, including a specialist interest in the globalisation of traditional music with particular reference to East-West/North-South European national and regional interactions and transnational engagements with other traditional idioms from around the world.
- Dance Research Forum Ireland, established by Dr Catherine Foley in 2003. Dance Research Forum Ireland is a non-profit, international, inclusive and interdisciplinary society for the promotion, support and development of dance research and practice in Ireland and further afield. In 2009, the Arts Council awarded seed funding of €140,000 towards the establishment of the national dance archive at the UL Glucksman Library.
- The Music and Health Research Group, established in 2009. Current research interests include music in healthcare, music and lifespan development and music-assisted activity for people with disability or recovering from injury/illness.
- Community music
- Structured PhD programme in Arts Practice
- Ritual song traditions

Research at the Irish World Academy is contextualised by weekly postgraduate seminars, which provide opportunities for cross-disciplinary sharing as well as performances and visits from artists in residence.
Faculty //

Education & Health Sciences
EDUCATION & HEALTH SCIENCES

The Faculty of Education & Health Sciences (EHS) was created in January 2008 as part of a substantive academic restructuring at the University of Limerick. Departments include:

- Education & Professional Studies (EPS)
- Physical Education & Sport Sciences (PESS)
- Psychology (Psych)
- Nursing & Midwifery (N&M)
- Occupational Therapy (OT)
- Physiotherapy (PT)
- Speech & Language Therapy (SLT)
- Graduate Entry Medical School (GEMS)

The Faculty of Education & Health Sciences boasts a vibrant research community. Research, alongside teaching, is a core activity. The multidisciplinary structure and expertise of the faculty provide research agendas around active management of lifelong ageing, biomedical sciences, clinical therapies, education, food & health, health sciences, physical activity, sport and sport sciences, professional preparation and development, social issues and political identity – all areas where national challenges exist at this time.

There are currently 58 full-time and 32 part-time research students in the Faculty of EHS. EHS provides a number of high-quality taught postgraduate programmes, which are central to increasing the research capacity of the faculty. Our postgraduate students are members of a wider research community – involving research-active academic staff and research specialists – within the faculty. Research interests and productivity are reflected in the increased number of EHS-housed research centres, units and groups that are national research leaders in their field.
Research clusters including research centres within EHS include:

- PEPAYS – Physical Education, Physical Activity and Youth Sport Research Centre (PESS)
- Centre for the Active Management of Lifelong Ageing (CAML) (GEMS)
- Centre for Pre-Hospital Research (GEMS)
- Centre for Social Issues Research (Psych)
- Research Centre for Education and Professional Practice (EPS)
- Biomechanics Research Unit (PESS)
- Curriculum Evaluation and Policy Research Unit (EPS)
- Ubuntu; the Teacher Education for Sustainable Development Network; and the Irish Regional Centre of Expertise in Education for Sustainable Development (EPS)
- Limerick Hub of the National Physiotherapy Research Network (PT)
- Applied Biostatistics Consulting Centre (GEMS)
- Human Sciences Research Unit (PESS)
- Biomedical Industry Initiative 2008 (GEMS)

**Departmental Interests**

**Education & Professional Studies**

The Department of Education & Professional Studies welcomes applications for research in a wide range of fields within education at both primary and second level. Current research interests include initial teacher education, action research in education, ICT in education, teacher education for sustainable development, school management and self-evaluation, curriculum and assessment in second-level education, gender issues in education, curriculum renewal and implementation, moral and emotional development, clinical and educational psychology, health promotion, and guidance and counselling in second-level education. The new Research Centre for Education and Professional Practice (RCEPP) will be a key infrastructure in the support of research interests across the university in teaching and learning.
Graduate Entry Medical School

The Graduate Entry Medical School (GEMS) set up the Centre for the Active Management of Lifelong Ageing (CAML) in 2007 with a vision to “engage in relevant medical research, dedicated to improving health in society”. CAMLA’s initial research focus is on the various aspects of ageing and, particularly, on strategies to optimise health in old age. In its short life to date, CAMLA has brought together a large number of hitherto disparate individuals and groups to develop common research agendas. Because the GEMS sits in the Faculty of Education & Health Sciences, which includes Clinical Therapies (Physiotherapy, Occupational Therapy and Speech & Language Therapy), Education & Professional Studies, Nursing & Midwifery, Physical Education & Sport Sciences and Psychology, it is uniquely placed and very keen to collaborate in interdisciplinary clinical, educational and research initiatives.

Nursing & Midwifery

The Department of Nursing & Midwifery offers a range of varied and exciting research opportunities to prospective postgraduate students. The department’s research focus over the past five years mirrors various niche areas of research interest across the various disciplines of general, intellectual disability and mental health nursing and midwifery. Prospective postgraduate students at the Department of Nursing & Midwifery can register for level 9 specialist and advanced practice graduate diploma/MSc programmes and for a level 9 non-specialist graduate diploma/MSc programme in nursing and midwifery. Postgraduate masters programmes by research and PhD are also on offer. The annual Patricia Connor Gorman Graduate Scholarship is awarded by the department to encourage and support UL nursing graduates to engage in research activities.

Occupational Therapy

The Department of Occupational Therapy is committed to engaging in relevant occupation-focused research dedicated to improving health and wellbeing in society. Department staff and researchers participate in a number of national and international research groups within the university. A wide range of expertise in clinical and health service research exists within the department. Active research areas include occupational science, research with particular groups (people with mental health difficulties, people with dementia, wheelchair users), health and social care service delivery and educational research.
Physical Education & Sport Sciences

The Department of Physical Education & Sport Sciences (PESS) has a growing research programme in the areas of biomechanics, exercise physiology, exercise biochemistry, physical activity and health, physical education and professional development, motor skills, sports psychology and sports coaching. The department currently hosts the Physical Education, Physical Activity and Youth Sport Research Centre (PEPAYS), the Biomechanics Research Unit and the Human Sciences Research Unit.

Physiotherapy

Research interests within the Department of Physiotherapy include shoulder dysfunction, pain, outcome measures, cardiac and pulmonary rehabilitation, clinical placements, neurological rehabilitation (including physiotherapy and physical activity programmes for people with multiple sclerosis and the use of technology in neurorehabilitation), low back pain, motor control, motion analysis and sports injuries (including injury prevention), flexibility, rheumatology, falls in the elderly, the development profile of six-to-eight-year-old children in rural Ireland and the effect of a school-based motor skills training programme.

Psychology

The Department of Psychology at University of Limerick is a recent addition to the campus. This new and vibrant department focuses explicitly on social psychology, which makes the department unique in Ireland. The Department of Psychology is currently aiming to consolidate its excellent research profile in areas of social psychology such as social identity, social development, minority/majority relations, prejudice, social exclusion and crowd behaviour. The department led the development of a Centre for Social Issues Research to promote research on social issues across the university.

Speech & Language Therapy

The Department of Speech and Language Therapy has existing research interests and expertise in aphasia, feeding and childhood language impairment. Additional research is underway in professional decision making, childhood language development, multilingualism, cleft palate, developmental speech disorders, specific language impairment and stammering.
I work as part of a team on the “Getting the Balance Right” project – an evaluation of physiotherapy and exercise programmes for people with multiple sclerosis (MS) in Ireland. I went straight from my degree in physiotherapy to my postgraduate studies. My desire to contribute to evidence-based practice in a clinically relevant area and to make a positive difference to people’s lives were the biggest driving forces in my quest to pursue research in this topic.

To date I have completed a literature review, submitted a large number of ethics proposals, carried out a pilot study and collected data for the main study. As a group we have started to enter data for initial and follow-up assessments. The most challenging – and probably most important – part of the first year was conducting the literature review to identify the gap in research and the most appropriate outcome measures. This was a lengthy and often isolating process. However, it paved the way for an exciting year. Highlights of the first year included giving oral presentations at MS conferences in Leeds and Canada and at the annual and student conferences of the Irish Society of Chartered Physiotherapists (ISCP). An additional highlight was the delivery of training days by the project team to physiotherapists on the national implementation of exercise programmes for our randomised controlled trial.

The project team has been asked to write articles about the role of chartered physiotherapists in the rehabilitation of people with MS. Seeing our hard work in print is one of the more enjoyable aspects of research. Feedback to the project to date has been very positive and indicates that our research is making a significant difference in people’s function and quality of life.

My current postgraduate work has been kindly sponsored by the Irish Research Council for Science, Engineering and Technology (IRCSET) and is being carried out in conjunction with Multiple Sclerosis Ireland.
I graduated in 2006 with a BSc in Sports and Exercise Science (first class honours) from the University of Limerick. Following this I spent six months working as a research assistant to Professor Phil Jakeman in the Human Science Research Unit (HSRU), Department of Physical Education & Sport Sciences (PESS). During this time I successfully applied to the Embark Initiative Postgraduate Research Scholarship Scheme operated by the Irish Research Council for Science, Engineering and Technology (IRCSET). I commenced my postgraduate research in Oct 2007 at the HSRU under the direction of Professor Jakeman.

My research interests include nutrient regulation of growth factor response in human skeletal muscle. Utilising the microdialysis technique for the sampling of interstitial fluid, this project seeks to investigate the inter-cellular response to the interaction of amino acids and growth factors in human skeletal muscle following mechanical loading. The research challenges the hypothesis that skeletal muscle protein synthesis is augmented by essential amino acids via an up-regulation of the differential expression of IGFs in response to mechanical loading.
Professor Billy O’Connor joined the Graduate Entry Medical School as Head of Teaching and Research in Physiology in 2008. A leading figure in neuroscience research, Professor O’Connor has 25 years’ experience in research and teaching. He has authored over 100 full original papers, five reviews, three book chapters, one editorial and 288 conference proceedings abstracts. He has also edited one book – Monitoring Molecules in Neuroscience (2001) – and has secured over €3 million in research funding since 1996. Professor O’Connor graduated with a BSc in Biochemistry (1981) and a PhD in Pharmacology (1986) from NUI Galway. Leaving Ireland in 1987, he worked as a postdoctoral researcher in neuroscience at the Department of Physiology and Pharmacology at the Karolinska Institute, Stockholm, where he progressed to the position of associate professor. He returned to Ireland in 1995, taking up a college lecturer post in the Department of Human Anatomy and Physiology in UCD.

He rose to the position of Head of Neuroscience in the Conway Institute, where he achieved an SFI Investigator award in 2004. In 2000 Professor O’Connor was awarded the Conway Silver Medal for Achievement in the Biosciences and in 2005 the SCRIP Award for best partnership alliance with Wyeth for cooperative work on brain illness treatments. The challenge of developing a world-class centre of excellence in translational medicine and the prospect of teaching talented and motivated graduate students enticed Professor O’Connor to his current position with the Graduate Entry Medical School. He is Director of the Translational Medicine and Therapeutics Laboratory in the GMS, which works independently to develop a clinical microdialysis initiative on campus and in the local teaching hospitals. Professor O’Connor is currently working on a joint research project with Professor Phil Jakeman (PESS), the aim of which is to investigate changes in metabolism in the leg muscles of healthy adults during muscle contraction.
KBS
Kemmy Business School
KEMMY BUSINESS SCHOOL

The Kemmy Business School (KBS) is a dynamic and innovative business school with a reputation for first-class education and leading research. The KBS hosts over 110 faculty and staff and almost 3,000 students (of whom 480 are postgraduates).

The Graduate Centre of Business is situated in the Foundation Building at UL. The Graduate Centre was established in 1993 to ensure that students who were engaged in postgraduate research had a 'home' and an identity and to provide the services and infrastructure necessary for their studies. The Graduate Centre currently hosts more than 80 postgraduate students pursuing MBS and PhD degrees across a range of business disciplines.

KBS research funding includes significant awards from domestic and internationally competitive funding sources such as the Irish Research Council for Humanities and Social Sciences (IRCHSS), EU Framework Programme 7 and the European Foundation for Entrepreneurship Research (EFER). Members of the KBS are involved in collaborations within UL, with partners at other universities worldwide and with government agencies, professional organisations and industry stakeholders both in Ireland and overseas. The KBS currently participates in a number of successful research networks such as CRANET (Cranfield), European Network on Industrial Policy (EUNIP), Marketing in the 21st Century (Aston) and Cross Cultural Management (IESE, Barcelona).

Research Themes of the KBS

The research interests of KBS faculty can be categorised into the following four themes:

• Work, knowledge and employment (theme leaders: Professor Patrick Gunnigle and Dr Siobhan Tiernan)
• The services economy and tourism (theme leaders: Professor Jim Deegan and Dr Eoin Reeves)
• Entrepreneurship, innovation and marketing (theme leaders: Dr Naomi Birdthistle and Dr Lisa O’Malley)
• Public policy, enterprise, governance and sustainability (theme leaders: Dr Helena Lenihan and Dr Philip O’Regan)
Work, Knowledge and Employment

The core research challenge under this theme is to investigate how developed economies, particularly Ireland, can strike a balance between economic and social performance in promoting ‘best practice’ that enhances competitiveness and productivity while concurrently embracing good employment standards and enhancing human capital and partnership at work. Ireland’s status as a small open economy lends itself to the comparative analysis of both employment relations and practice.

Building on a long-established record of achievement in workforce management research and teaching at UL, this research theme focuses on workplace learning, human resource development and intellectual capital; work design, workplace relations and employee wellbeing; embedding foreign direct investment; strategic human resource management and business performance; and the political economy of workplace relations and labour markets.

The Services Economy and Tourism

The rationale for the establishment of this research theme emerges from the changing nature of consumption and production in modern societies. At present, over two-thirds of those employed in Europe work in services (both private and public) and between 60 and 70 per cent of Gross Value Added in most European states can be attributed to services. The broad areas for research include transport, tourism and travel, insurance, financial services, educational services, legal services, business and public services.

Entrepreneurship, Innovation and Marketing

Ireland’s goal is to develop an indigenous innovation-driven economy. To achieve this, innovative, entrepreneurial and marketing-related skills and attitudes need to be nurtured. The KBS contributes to this agenda through its research on small- and medium-sized enterprises. Specific research foci include internationalisation, family businesses, marketing strategy, advertising and consumer research, new product development, branding and relationship marketing. The interface between entrepreneurship and pedagogy and between marketing and innovation has also attracted significant research attention. Scholars are open to new research agendas, and emerging research is currently ongoing in social, female and ethnic entrepreneurship, crisis management, high-growth firms, metrics for innovation and marketing.
Public Policy, Enterprise, Governance and Sustainability

Within this theme, the public policy focus concerns itself with industrial and economic development issues and policy, the survival and growth of firms and the role that public policy (amongst other factors) plays in this regard. There is also a concern with public policy evaluation, which, to date, has been primarily applied to the evaluation of industrial and enterprise policies. These are complemented by ongoing research into the disciplinary and distributive consequences of taxation policy. The focus on enterprise is key to the theme given that much of the research activity is operationalised at the level of the enterprise.

The focus on governance reflects the emerging importance of matters relating to regulation, corporate governance and professional self-regulation. Ongoing research activity in these areas embrace risk (including political risk) and governance, behaviour and dynamics of boards of directors, regulatory and legislative compliance, control mechanisms in large and small firms and corporate social responsibility. Emphasis on notions of sustainability reflects the emergence of this topic both as an area of discrete interest and one that offers interdisciplinary possibilities.

Research Centres

- Centre for Entrepreneurial Studies
- Centre for Information and Knowledge Management
- Euro-Asia Research Centre
- International Centre for Sustainable Enterprises
- National Centre for Tourism Policy Studies
Student Funding

The Graduate Centre of Business periodically offers research assistantships and stipends to scholars registering for postgraduate degrees by research and thesis. The KBS also offers the following full-time PhD scholarships:

- European Network on Industrial Policy (EUNIP)/UL Scholarship
- International Management Scholarship
- KBS Centre for Project Management Scholarship
- Kemmy Business School Scholarship
- Department of Accounting and Finance Scholarship
- Department of Economics Scholarship
- Department of Personnel and Employment Relations Scholarship
- Dr Dave McKevitt Doctoral Scholarship (Department of Management and Marketing)

Detailed information on each scholarship is available at www.ul.ie/business.
My name is Nicola Lynch and I am in the third year of my PhD in Economics. I completed my undergraduate studies and MBS in Business Economics at University College Cork. I first came to UL as a Teaching Assistant in 2002. It was, however, through my work as a Research Assistant that I developed my interest in research. My research project develops frameworks for evaluating the impact of business networks in Ireland. In the first year of my research I was awarded the UL Registrar’s scholarship and was subsequently awarded the IRCHSS Government of Ireland Research Scholarship (October ’07 – present).

The KBS has a strong research profile and provides great encouragement for research students. My supervisor, Dr Helena Lenihan, is well known in her field of research and provides great support and encouragement. I have had the opportunity to present my research at both national and international conferences and have published a paper in an internationally peer-reviewed journal. These experiences alone are immensely rewarding and make all the hard work more than worthwhile.
Professor Michael Morley is Professor of Management and Head of the Department of Management & Marketing in the Kemmy Business School. A graduate of the University of Limerick, Professor Morley has been a career academic for over 16 years. His earlier appointments at UL include junior lecturer, lecturer and senior lecturer in human resource management. He has also previously served as Head of the Department of Personnel & Employment Relations, as Assistant Dean of Research and as Director of the Graduate Centre of Business.


Professor Morley is associate editor of the Journal of Managerial Psychology and regional editor of the European Journal of International Management. In addition, he serves on the editorial boards of nine other international journals, including International Journal of Cross Cultural Management, Leadership and Organizational Development Journal, International Journal of Strategic Change Management and International Journal of Employment Studies. He is the 2007–2010 Elected Chair of the Irish Academy of Management (IAM), the leading professional association for management research and education on the island of Ireland.
Faculty // Science & Engineering
Comprising the following 10 departments, the Faculty of Science & Engineering is the largest faculty in UL.

- Architecture
- Chemical & Environmental Sciences
- Computer Science & Information Systems
- Electronic & Computer Engineering
- Life Sciences
- Manufacturing & Operations Engineering
- Materials Science & Technology
- Mathematics & Statistics
- Mechanical & Aeronautical Engineering
- Physics

The faculty’s departments currently deliver taught and research postgraduate programmes to in excess of 1,000 registered postgraduates, 500 of whom are pursuing doctorate programmes. The primary focus is on increasing the quality and quantity of postgraduate students and research outputs, including PhDs and publications.

The main research objective of the faculty is to provide a research-driven environment that will undertake both fundamental and applied research. Promoting the publication of results, attracting national and international researchers and developing further collaborative links with industry are also key priorities.

The research interests of the faculty cover a wide spectrum of disciplines under the umbrella of three strategic research institutes – Materials & Surface Science (MSSI), Stokes Institute and the Irish Software Engineering Research Institute (Lero) – and a large number of research centres, including MACSI (Mathematics Applications Consortium for Science and Industry). More recently, a major emphasis has been placed on energy and sustainable environment research under the Charles Parsons Initiative (CPI).

**MACSI - Mathematics Applications Consortium for Science and Industry**

The MACSI industrial mathematics network is the first of its kind in Ireland – a network of mathematical modellers and scientific computational analysts whose objectives include:
• Producing world-class research and research training in mathematical modelling
• Enabling industrial companies to improve their products and processes through the application of cutting-edge mathematical modelling techniques
• Providing an outreach programme to school students to raise their awareness of the role of mathematics in modern industry

MACSI is the initiation of a new era in Irish mathematics, where applied mathematicians underpin developments in the physical, biological and social sciences. The group is supported by the largest single grant ever awarded to mathematics in Ireland (€4.34 million from the SFI Mathematics Initiative).

Charles Parsons Initiative

The Charles Parsons Initiative (CPI) has approximately 70 researchers active in the area of energy and sustainable environment and has earned more than €20 million in external research funding since 2004. Representing a merger of six research centres at UL, CPI focuses on researching environment and sustainable forms of energy across the areas of electrochemistry; physics; electronic, mechanical and aeronautical engineering; computer science; mathematics and statistics; and accounting and finance.

CPI is considered to be a leading player in Europe in the area of biorefining and has made significant progress in the modelling of national energy systems. These themes match the key strengths of CPI with the needs of tomorrow, i.e., the production of fuels and platform chemicals from biomass; storage which is widely considered the key enabling technology for large-scale renewable electricity systems; and integrated modelling of electricity, heat and transport to enable informed decisions on the primary scientific and engineering challenges of our time.

Current research activities include:
• Energy generation using renewable natural resources (wind, solar, wave, ocean current, hydro)
• Bio-fuels and advanced conversion
• Energy conservation, storage, energy efficiency
• Environmental sensors; thermal, emissions, gases, radiation, distributed environment monitoring
• Sustainability and energy-related environmental considerations
• Life-cycle engineering
I completed a BEng in Management Engineering with French at NUI Galway. Ergonomics formed a substantial part of my undergraduate degree, and I decided I would like to continue my studies in this area. I applied to UL because of the ergonomics facilities on campus and the availability of funding. I was specifically interested in a project in the area of productivity and ergonomics.

Musculoskeletal disorders (MSDs), particularly those of the upper limb, are highly prevalent in industry. Implications of MSDs for industry include cost and lost work days. MSDs also have implications for productivity, not only because of lost work days but because of the functional incapacity of operators as a result of pain or discomfort. My research project investigates the relationship between pain and discomfort resulting from MSDs and operator productivity. It is hoped that an ergonomic productivity assessment tool will be developed that will enable an ergonomist to complete productivity and discomfort assessments in tandem.
CÁTHÁL WILSON / A Postgraduate’s Experience

I am a PhD student in the Enterprise Research Centre in the Engineering Research Building. I graduated from UL with a degree in Manufacturing Engineering in 2005 and am currently finishing my PhD research. I decided to stay on at UL and do my PhD here because of the supervision and support structures that were available on campus. It’s also a great location for me as it’s a good halfway point between my industrial contacts in Cork and the Midlands.

I currently work with Dr Con Sheahan as part of the Enterprise Performance Research Group, which is studying enterprise performance measurement in small and medium enterprises. My research is funded by a three-year IRCSET scholarship. I had a good knowledge of manufacturing before I started my PhD. My parents own and run an industrial heating company – Ceramicx Ireland Ltd. based in West Cork – and I’ve also acted as a contract consultant in the area of productivity improvement with Andona Services Ltd. based in Longford.

The type of research I am doing means that my days are varied. As part of my research I spend a lot of my time with various on-site companies. I’ve also acted as teaching assistant for a number of modules in the Department of Manufacturing & Operations Engineering, and I ran the Drawing Learning Centre for three semesters. In 2007, with fellow student Andrew Lynch, I ran a one-day workshop that brought 30 companies to the campus. Doing postgraduate research gives you opportunities to publish – to date I have published six conference papers, two journal articles and some articles for Technology Ireland Magazine.
Dr Martin J. Leahy joined the University of Limerick in 1997 as a research scientist with the Department of Mechanical & Aeronautical Engineering. He is currently employed as a lecturer in the Department of Physics and lectures on the following modules: Medical Physics, Medical Instrumentation, Physics for Engineers, Energy Ratings, Experimental Physics, and AC Circuits and Devices. In addition, Dr Leahy, teaches graduate courses on tissue optics for physical and life scientists and chairs the international Biophotonics and Imaging Graduate Summer School (BIGSS).

Prior to coming to UL, Dr Leahy worked as a Wellcome Trust research assistant at Oxford Brookes and as research fellow at the Department of Engineering Science at Oxford University. With a colleague, he established Oxford Optronix Ltd. in the 1990s to exploit developments in laser-based blood flow and oxygenation measurements, on which his DPhil thesis was based.

Dr Leahy’s research is always applied and, in addition to Oxford Optronix Ltd., has so far led to the establishment of Biomass Heating Solutions Ltd., Millstream Energy Ltd. and Wheelsbridge AB. The implications of the growing energy crisis and dwindling fossil fuel reserves have been recognised by the University of Limerick with the establishment of the Charles Parsons Initiative (CPI) on energy and sustainable environment. Dr Leahy is currently Director of CPI. CPI is Ireland’s largest research organisation in this area.
Dr Leahy’s interest in biophotonics is largely in the interaction of visible and infrared light with human tissues. Historically, this has been manifested in the development of instruments to measure blood flow (laser Doppler) and oxygenation (spectroscopy), which have found many applications due to the role of the microcirculation in all organs. More recently, Dr Leahy’s research group has been collaborating with the University of Linköping on the development of a suite of instruments related to tissue viability and skin aging. The first of these, the ‘TiVi imager’, is just now becoming commercially available via Wheelsbridge AB. It uses the technique of polarisation spectroscopy and a patented image analysis technique to provide an index of red blood cell concentration in the tissue. Two postdoctoral researchers and four PhD students are working on these themes, which are closely linked to clinical need. A further five students are working on the energy storage theme.
Research Institutes
The Institute for the Study of Knowledge in Society (ISKS) was established in 2006 with the objective of building on UL’s unique reputation in Ireland for integrated, interdisciplinary arts, humanities and social sciences research. ISKS currently has 47 associates, 60 PhD students, four postdoctoral fellows and one research scholar. ISKS was awarded €2.5 million in PRTLI 4 for its ‘Knowledge Interfaces’ project. Researchers in ISKS examine knowledge in society in four interrelated ways:

- **Knowledge innovation**: creating new knowledge by bringing different disciplines and groups together
- **Knowledge transfer**: translating academic knowledge to inform policymakers and stakeholders
- **Knowledge about society**: understanding the construction and dissemination of knowledge by and in society, with particular emphasis on the cultural, political, linguistic, historical and legal aspects of these processes
- **Knowledge as an economic good**: studying how knowledge is distributed and experienced in an Irish and an international context

Originally based in the Faculty of Arts, Humanities & Social Sciences, ISKS has become a cross-faculty institute servicing the needs of associates from a range of diverse disciplines in all four faculties of the university. Associates are drawn from the School of Languages, Literature, Culture and Communication; the Graduate Entry Medical School; the departments of Sociology, Politics & Public Administration, History, Law, Computer Science & Information Systems, Physical Education & Sport Sciences, Occupational Therapy, Psychology, Economics and Management & Marketing; and the Irish World Academy of Music and Dance.

Research in ISKS is organised around a number of interfaces, or themes. These are collaborative, interdisciplinary, thematic projects, which reflect key ISKS priorities (aligned with UL, national and EU priorities); provide support and infrastructure for projects and applications; create synergies across different disciplines, faculties and institutions; and facilitate interaction with policymakers, communities, professionals, industry and other stakeholders.
The current programme in ISKS includes the following interfaces:

- Shaping technology
- Understanding health
- Changing communication
- Governance and citizenship
- Modelling development
- Cultural cohesion and diversity
- Understanding equality

ISKS is a partner in the Irish Social Sciences Platform (ISSP), which is funded under PRTLI 4. ISSP is the only all-island platform of integrated social science research and graduate training; it focuses on the social, cultural and economic transformations shaping Ireland in the twenty-first century. Other partners include NUIM (lead partner), NUIG, DCU, UCC, MIC, QUB, TCD, ITS and WIT. For more information on ISSP, see www.issplatform.ie.

ISKS currently offers two graduate education programmes (GREPS) – or structured doctoral programmes – one in social sciences and one in applied languages. These four-year integrated programmes lead to the award of PhD and consist of specialised academic modules, generic modules and research. Specialist modules are undertaken in years 1 and 2, mostly in UL, but may also be taken at one of our ISSP partner institutions in Ireland or abroad, as appropriate. These modules provide postgraduate students with specialist content and methodological training relevant to their research programme. Generic modules provide postgraduate students with the skills necessary to complete their research as well as transferable skills to prepare them for their working lives.

For more information on ISKS, see www.ul.ie/ISKS.
Lero - THE IRISH SOFTWARE ENGINEERING RESEARCH CENTRE

Lero was established in 2005 by software engineering researchers from the University of Limerick (UL – lead partner), Dublin City University (DCU), Trinity College Dublin (TCD) and University College Dublin (UCD). It was initially funded by Science Foundation Ireland (SFI) under the Centre for Science Engineering and Technology (CSET) programme.

Lero’s mission is to deliver world-leading research in those areas of software engineering that support evolving critical systems. Lero’s research agenda addresses several core research topics in the evolving critical systems field. The central research topic is building software that is highly reliable and that retains its reliability as it evolves. Lero enhances the quality and competitiveness of the Irish software industry through shared projects, knowledge transfer and education. Lero’s researchers deliver internationally recognised scientific outputs, publish in leading journals and present at international conferences.

Lero and Industry

Software engineering is an applied discipline and, as such, research in the area must be grounded in practice. By using research to make better products in a more effective manner, companies can gain competitive advantage. However, research is costly and time-consuming and may not yield useful results. This is where Lero comes in. Lero’s researchers work closely with Irish industry to identify key topics and validate proposed solutions. Lero will assist partner companies in finding financial support for joint research initiatives.

Lero Outreach and Education

Lero runs a successful education and outreach programme that aims to make software engineering and, in particular, Lero research visible and accessible at second- and third-level education in Ireland. Lero has developed a highly successful transition year (TY) computing module based on MIT’s “Scratch” software in collaboration with IT Tallaght and CIO Ireland. In partnership with the Irish Computer Society, the materials have been distributed to all second-level schools in Ireland. For more details, visit www.scratch.ie.

Lero has established the Lero Graduate School in Software Engineering (LGSSE), which provides a structured PhD programme. In addition, at fourth-level, the outreach and education programme is concerned with organising events and providing services to postgraduate students and researchers. Visit www.lero.ie for more details.
Dr Goetz Botterweck is a senior research fellow at Lero. He received his MSc in Computer Science and Information Systems (“Diplom-Informatiker”) and his PhD in Computer Science at the University of Koblenz-Landau, Germany. In March 2007 Dr Botterweck joined Lero, where he now heads the project on model-driven product derivation. His research interests include model-driven software engineering, user interface engineering and information systems engineering.
Lianping Chen is a doctoral researcher at Lero. He received a masters degree in software engineering from Northwestern Polytechnical University, China. During his postgraduate studies in China, he spent one year as an intern at IBM China Research Lab, Beijing. His doctoral research focuses on developing and evaluating techniques and tools for architectural knowledge management. Lianping is also interested in improving the use of empirical methods for software engineering research.
Hesham Shokry is a PhD student at Lero. He received a BSc in Electrical and Computer Engineering from Assiut University, Egypt. Hesham's research focuses on approaches to designing and evaluating dynamic software architectures for embedded systems. Before joining Lero, Hesham worked for three years as a staff software engineer with IBM, developing software systems for the automotive industry. Prior to joining IBM, he was a research engineer at the Aerospace Research Center, a governmental institute in Egypt, where he was involved in developing avionics software and simulation tools.
MSSI - MATERIALS & SURFACE SCIENCE INSTITUTE

The Materials and Surface Science Institute (MSSI) is the leading national institute in materials and is internationally recognised for its work. MSSI has gathered together faculty members from a range of academic disciplines (materials science; physics; chemistry; biochemistry; and electronic, mechanical, biomedical and aeronautical engineering). MSSI utilises this interdisciplinary approach to develop and characterise materials from the atomic to the macroscopic scale, providing new materials, processes and applications.

MSSI is the largest research institute in the university and currently houses over 220 researchers. The institute resides in a purpose-built building that houses a comprehensive range of state-of-the-art equipment and facilities for the synthesis and characterisation of materials. MSSI has a significant track record in solving fundamental research problems with direct application in industry and has collaborative research programmes with a wide range of companies such as Cook Inc, Pfizer, Rusal Aughinish Alumina, Merck, Roche and Crescent Diagnostics. MSSI currently has over 100 active collaborations with research institutions nationally, across Europe and in the US, China, India and Australia.

The research activities of MSSI are focused on four research themes: nanomaterials, biomaterials, composite and glass materials, and bio/catalysis and clean technology.

Nanomaterials

Control of matter at the nanoscale (dimensions sub-100nm) is fundamental to a range of modern industries and in particular to electronics and photonics. As enhancement of material and device performance through control at the microscale reaches its limits, dramatic improvements can be achieved through the synthesis, control and organisation of material at the nanoscale. MSSI focuses on developing new materials for semiconductor and solar cell applications.
Biomaterials

Biomaterials research is concerned with the development of biomimetic materials in which in-vivo devices function in ways that mimic the organ or tissue they are replacing or supplementing. Specific target areas for the cluster are orthopaedics and vascular repair and replacement, with an emphasis on developing materials that enable regeneration of tissue.

Composite and Glass Materials

Composite materials are used widely in lightweight, safety-critical applications, such as those found in modern aircraft structures. Recently, their use has broadened into a range of applications used in biomedical devices and in the automotive and construction sectors. Ceramics, ceramic composites and glasses are also used as biomaterials and photonic materials. The composite and glass materials cluster is focusing on producing materials, structures and devices with high performance, maximum functionality and minimal environmental impact during production and utilisation.

Bio/Catalysis and Clean Technology

This cluster focuses on the development of new catalysts and methods of producing materials more effectively and efficiently. A major programme has commenced to examine the mechanism by which crystals form. This is a significant challenge and a serious issue in the pharmaceutical sector, which is highly regulated and where the production of pharmaceutical ingredients in the incorrect format can be significant in terms of cost and waste disposal. For more details on MSSI, visit www.ul.ie/mssi.
Dr Syed A. M. Tofail is a senior research fellow at MSSI. Dr Tofail received his BSc in 1996 and MSc in 1999, both in metallurgical engineering from the Department of Materials and Metallurgical Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh. He was a lecturer at the Department of Materials and Metallurgical Engineering at Bangladesh University of Engineering and Technology prior to coming to the University of Limerick in 1999 to pursue his PhD at the Department of Physics. He completed his PhD in 2002 and joined MSSI as a postdoctoral fellow before taking up his current position as a senior research fellow in 2006.

Dr Tofail’s research interest is in the physical properties of materials with a specific focus on biomaterials and surfaces. In 2005, he discovered that hydroxyapatite, the main mineral content of bone and teeth, had piezoelectric properties, which may have implications for the development of new bone implants. While he is actively pursuing research in this area, Dr Tofail has also commenced research projects in the modelling and characterisation of materials and currently leads a research group in this field.

Since 2005, the group has received over €0.4 million in funding from Enterprise Ireland for research work with hydroxyapatite and nitinol. Dr Tofail is Project Coordinator for BIOELECTRICSURFACE, a European Commission FP7 project. Project partners include nine other European agencies as well as NUI Galway and Irish companies BeoCare and Cook Medical. The project will address the interactions of biological species with the surfaces of medical devices. The project team intends to develop nanotechnology-derived textiles that will help hospitals in their fight against MRSA.
Darragh Gaffney is a PhD student at MSSI. He received a BSc in Chemistry from UCD in 2005. While attending UCD, Darragh completed a 12-week UREKA placement in the research laboratory of Dr Peter Rutledge and, after receiving his degree, worked in the research laboratory of Professor Donald Fitzmaurice for nine months. He then moved to the University of Limerick after applying for a PhD position. Darragh was very impressed with the university as a whole. Not only was MSSI equipped with cutting-edge technology but there was a tangible buzz about the place that was generated from the multidisciplinary researchers located there.

Darragh’s current project deals with the tailored adsorption of enzymes onto mesoporous silicates for the generation of biocatalysts. A typical day is spent working in the laboratory and troubleshooting any problems that arise, as well as using a range of instrumentation to characterise samples. During the academic year, a portion of the week is allocated to demonstrating and teaching to undergraduate students. Darragh’s project, which is funded by SFI, has given him the opportunity to travel to international conferences from which collaborations with other universities have arisen.
Dr Gráinne Carroll currently works as a biomedical engineering postdoctoral research fellow at MSSI. Gráinne originally came to UL in 1999 to study BEng Mechanical Engineering. She was introduced to the concept of biomedical engineering on the programme, which combined her interest in engineering and biology. While completing her final year project under the supervision of Professor Tim McGloughlin, Gráinne realised that she had a strong interest in research and decided to apply for postgraduate positions in the biomedical engineering field. She joined the Centre for Applied Biomedical Engineering Research (CABER) in MSSI. Her PhD project incorporated engineering and biology by numerically investigating blood flow within the venous system for dialysis patients and subsequently analysing the regulation of endothelial cell genes by blood flow.

During her time as a postgraduate student at UL, Gráinne was able to avail of a number of opportunities, which included presenting her work to other biomedical engineers at home and abroad. International trips included travelling to Munich for the World Congress of Biomechanics and to Colorado and Florida for the American Society of Mechanical Engineers Summer Bioengineering Conference. Not only do these trips provide students with a chance to develop their presentation skills but they also introduce them to the international bioengineering world. Through these conferences, students can make contacts within the biomedical engineering field, which will hopefully open doors for them when they complete their postgraduate studies.

Upon completion of her PhD in January 2008, Gráinne applied to the FÁS Science Challenge Programme. Under this programme she went to Duke University, North Carolina, where she conducted further biomedical engineering research under Professor Morton Friedman.
The Stokes Institute is a multi-disciplinary team of engineers and scientists working on solutions to challenges in the most advanced fields of human endeavour. Its mission is two-fold: graduate education and scholarship; and innovation leading to the creation of enterprise. Stokes’s current research portfolio focuses on three application areas: ICT, aeronautics and life science research/molecular diagnostics.

### Information & Communications Technologies (ICT)

- Thermal management technologies: interface materials; two-phase heat spreaders; fans and active heat sinks; low profile cooling techniques; single-phase liquid cooling
- Energy management from silicon to ambient in large-scale computing and communications facilities
- Energy harvesting from vibrational and thermal sources
- Reliability physics of electronic interconnection and packaging: hygro-thermo-mechanical analysis; corrosion science; shock and vibration testing; failure analysis; and reliability statistics

### Aeronautics

- Fundamentals of aerodynamics, including boundary layer transition to turbulence
- Heat transfer in aircraft structures and composite materials
- Energy efficiency/entropy generation in fluid systems

### Life Science Research/Molecular Diagnostics

- Microfluidics-based systems for genetic analysis
The Stokes Institute is based in a custom-built research space within UL’s Engineering Research Building. It has a suite of laboratories that are comprehensively equipped for experimentation and simulation on fluid mechanics, heat and mass transfer, and materials phenomena. It also has access to UL’s state-of-the-art materials characterisation facilities.

Stokes’s researchers publish prolifically and present frequently at international conferences and meetings. The Institute has an excellent reputation for its graduate education – it has a growing alumni, many of whom have progressed to high-level careers in industry and academia.

Stokes participates strongly in governmental, European and industrially-funded research. It has fostered particularly deep partnerships with academia, research organisations and industry, such as Joint Research Centre, Bell Laboratories, Airbus, Nokia, Bart’s Hospital, US Department of Energy and Hewlett-Packard. In particular, Stokes prides itself on the creation of enterprise through spin-out companies (Stokes Bio Ltd.) and technology licenses (AMD, Asia Vital Components, Henkel). For further details, visit www.stokes.ie.
During my Mechanical Engineering undergraduate studies at UL I was introduced to the world of engineering research through a summer placement with the Stokes Institute. I worked on laser-based vibrometry techniques to examine the mechanical response of electronic assemblies, complementing skills that I developed on a nine-month cooperative education placement at Analog Devices in Limerick. My time at the Institute also gave great practical application for many skills learned throughout my studies in UL and a foundation for my final year project – an investigation of the reliability of three newly-developed solder materials under harsh vibration environments. I graduated with a first class honours degree in 2008.

My experiences of research inspired me to apply for an IRCSET scholarship to study at Stokes, and my application was successful. My research focuses on advanced packaging technologies for Micro Electro Mechanical Systems (MEMS), devices that are used extensively in modern electronics such as mobile phones. My work is being conducted in close collaboration with Analog Devices. I am currently developing a novel test facility to characterise the mechanical properties of glass frit sealing materials for MEMS.

Postgraduate research work is challenging and very rewarding. My project has been enhanced through the experienced guidance of my supervisor at Stokes and the close industrial links with Analog Devices. I have already had the opportunity to present my research at an international conference in the US, and I have recently given an invited talk at Analog’s R&D facility in Boston.
On completion of his B Eng (Hons) degree in Mechanical Engineering at UL in 2004, Ryan enrolled as a PhD scholar at the Stokes Institute. His research, funded by the SFI-funded CTVR Telecommunications programme, investigated superhydrophobic surfaces for thermal management applications. A considerable portion of his dissertation work was performed at Bell Laboratories, Murray Hill.

On completion of his PhD in 2008, he took up a postdoctoral position with the CTVR at UL to continue his research. In mid 2009, Ryan was awarded an INSPIRE: IRCSET-Marie Curie International Mobility Fellowship to work at MIT’s Device Research Laboratory, a position that features continued collaboration with Stokes. Ryan’s current research interests are in the areas of surface wettability, micro-scale transport, and thermal management for next-generation telecommunications equipment.
Life after Your PhD

Traditionally, the majority of postgraduate students moved from PhD study into academia and teaching. Today, however, as the number of students continuing to fourth level has increased, so too has the diversity of graduate employment.

Realising that the future of many postgraduate students will fall outside the traditional route, the Graduate School at UL offers a variety of free courses in transferable skills to research students. These courses offer students the opportunity to increase their knowledge in a variety of areas, such as project management, communication and presentation techniques, IT skills, team building and career management.

UL also offers a dedicated careers support service to research students. A full-time careers advisor is available to meet with postgraduates on a one-to-one basis to cover topics such as career options, employment opportunities, job search strategies, applications and interviews. In conjunction with the Graduate School, the postgraduate careers advisor delivers a suite of training workshops to help postgraduates identify and provide evidence of their transferable skills. Careers fairs and employer briefings are organised throughout the academic year and offer students the opportunity to discuss their career opportunities and interests directly with potential future employers. In addition, the Careers Service liaises with both the Graduate School and the International Education Division to deliver an information seminar on ‘Working in Ireland for International Students’.

Research Careers

The career opportunities pursued by UL research graduates is evidence of the diversity in both the range of subject area expertise and transferable skills of our research postgraduates. The 2008 graduate survey demonstrates an excellent employment record for PhD graduates – the survey showed that over 83% of graduates moved directly into employment across all sectors, including higher education research, academia, public sector, consultancy and industry. Salary levels vary among research students – average salaries range from €32,000 to €44,000 per annum, depending on the sector of employment and nature of the job.

UL offers research students the opportunity to develop excellent academic research skills and expertise as well as expanding on their personal and professional training to best position themselves for a wide variety of career opportunities upon graduation.
UL Research Graduates

DR HELEN MCQUILLAN / Postdoctoral Researcher

Helen McQuillan was running a restaurant business in Ennis in 1992 when she saw an advertisement in her local newspaper for postgraduate courses in UL. Joining the Women’s Studies course, she graduated with an MA in 1994 and a PhD in 2006.

Helen is currently working as a postdoctoral researcher in the Centre for Social and Educational Research in DIT. Her research is focused on digital inclusion, young people and new media, and gender and technology. Despite being a self-confessed technophobe when she joined UL, a module on ‘Technology, Innovation and Social Change’ set her research interests and her career in a direction she could never have envisaged. While she was doing her PhD she worked as research manager for two major ICT programmes: the Ennis Information Age Town Project in Ireland and the Local e-Government Programme in England. With unique insight into community engagement with ICT, Helen has worked as an advisor to EU, Irish and UK governments on e-inclusion policy. She now works with many community technology projects, including DIT’s Digital Community programme and Limerick City’s Community ICT programme.

DR DAVID COLLINGS / Senior Lecturer

David Collings is a senior lecturer in international management at NUI Galway. He is a graduate of the BBS, MBS (Human Resource Management) and PhD programme at UL. After completing his PhD Dr Collings joined the faculty at the University of Sheffield’s Management School in the UK. He has published widely in the area of human resource management. His work has appeared in leading journals such as Human Resource Management, Journal of World Business, International Journal of Human Resource Management, Human Resource Management Review, and in a number of chapters in research monographs and text books. He has edited six books, the most recent of which is Human Resource Management: A Critical Approach with Geoff Wood (Routledge 2009). Dr Collings is currently editor of the Human Resource Management Journal and Irish Journal of Management.

“I cannot recommend the PhD programme at the Kemmy Business School highly enough. My studies were supervised by Professors Paddy Gunnigle and Mike Morley, who are two of the leading scholars in the field of international HRM, not only nationally but internationally. The key benefits of the programme included the personal attention students received from their supervision team, the research culture within the Kemmy
Business School, the top-quality facilities and the world-class faculty. The fact that I gained a permanent faculty position in one of the UK’s leading management schools at the University of Sheffield before even having graduated from the programme is testament to the international reputation which the University of Limerick and the Kemmy Business School enjoy internationally. The PhD programme at the Kemmy Business School most certainly provided me with a very solid foundation for a career in academia, and I would recommend it without reservation to anyone considering pursuing a PhD in HRM or international management more generally.”

**DR TOM COMYNS / Strength & Conditioning Coach**

“My PhD research, which was funded by the Irish Rugby Football Union and Energia, focused on applied strength and conditioning training methods. It looked at how to effectively combine weight training and plyometric (jump) training to enhance the power training of Irish rugby players. Since completing my PhD in May 2006, I have been working as strength and conditioning coach with Munster rugby and the IRFU. I chose this career path because it was a direct follow-on from my applied research and has provided me with the opportunity to apply my research findings to improve the quality of the Munster rugby players’ strength and power training.”

**DR ABIGAIL MACKEY / Postdoctoral Research Fellow**

“The projects carried out as part of my PhD in UL were focused on monitoring the response of muscle to different exercise challenges. The main aspect of this research was documenting the changes in the connective tissue structures within the muscle. The work was performed on blood and muscle samples from healthy young men and women, and the findings were published in peer-reviewed journals.

Soon after completing my PhD in 2003, I moved to the Institute of Sports Medicine, Copenhagen for a two-year post-doc position, where I am now permanently employed. My main job here is to carry out experiments as well as to educate PhD students in methods required for their own analyses. The work I do in Denmark is closely related to my research in UL from the point of view of laboratory methods as well as building on the knowledge base established at that time. While I can’t say that I ever set out to purposely pursue a career in research, I can say that being where I am today is due to a combination of factors, i.e. choosing work that I enjoy and that has good prospects, and choosing options that were open to me at various stages of my career path.”
In November 2009, Cauwill Technologies Ltd. was awarded the Best-Emerging Company by IntertradeIreland in the Seedcorn competition and scooped €100,000. The company was founded in 2009 by Ronan Skehill and Ian Rice. The company’s product, PinPoints, is a smart web-mobile technology that reaches into sat-navs and programs them for end users. Cauwill’s software and services are sold to the travel industry, and the company is currently focusing on the online hotel booking engine segment of the market.

Both graduates completed their PhDs under the supervision of Dr Sean McGrath in the Wireless Access Research Centre at UL. During their research they secured an Enterprise Ireland Proof-of-Concept project, which focused on location-based services and extending the technology to mobile platforms. The research and development conducted during the project formed the foundations of a commercial and patented piece of technology, which ultimately led to the creation of Cauwill Technologies Ltd, the spin-out company.
How to Apply
Applying for Postgraduate Research

The minimum entry requirement to a postgraduate research degree is an honours primary degree (level 8 – as defined by the National Qualifications Authority of Ireland) with a minimum classification of a 2:1 or 2:2. Individual faculties or research centres may have specific entry requirements.

The first step in applying for a graduate research position is to identify a potential supervisor and project. Up-to-date information on research activities in faculties, departments and research centres is available on the UL website: www.ul.ie. At this stage you should also try to identify possible sources of funding.

Once you have identified a supervisor and project, you should complete a research application form and submit it to the Postgraduate Admissions Office. Application forms are available from www.graduateschool.ul.ie. UL accepts research applications throughout the year.

International Applicants

In addition to the minimum entry requirements specified above, international applicants are advised to meet the following standard English language requirements:

IELTS score of 6–6.5 and not less than 6 in any one component for entry to the Faculty of Science & Engineering and a composite score in the range of 6.5–7 and not less than 6 in any one component for entry to the Faculties of Arts, Humanities & Social Sciences, Education & Health Sciences and the Kemmy Business School.

Information on visas, immigration, accommodation and insurance is available on the Graduate School website: www.graduateschool.ul.ie.

Fees

An up-to-date schedule of fees is available to download from www.graduateschool.ul.ie
Funding

Funding for postgraduate research is available from a variety of sources. Individual faculties at UL may offer scholarships or funded positions while external funding is available from Irish and international research councils, other public bodies and the private sector. The two main research councils in Ireland are the Irish Research Council for Science, Engineering and Technology (IRCSET) and the Irish Research Council for Humanities and Social Sciences (IRCHSS). Local authority funding is also available to research students.

For further information contact:

Postgraduate Admissions Office
Graduate School
University of Limerick

E: postgradadmissions@ul.ie
T: +353 61 23 43 77
The Living Bridge, University of Limerick

The 350 metre long pedestrian bridge is one of the most innovative and impressive pieces of architecture on campus. Designed by Wilkinson Eyre Architects, London and built by Eiffel Construction Metallique, the bridge connects the north and south banks of the university campus.

The bridge includes four platforms, which are designed to accommodate social gatherings, informal teaching sessions, music and dance performances as well as a wide array of educational, social and cultural activities.

Photographs:
Eoin Stephenson, Rumhann Howard-Hildige
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