Loughborough University

The Loughborough Doctoral Experience

An introduction to doctoral research

Contents

To find out more about doctoral research at Loughborough, including current opportunities, visit: lboro.ac.uk/pg-research-degrees

Welcome from Loughborough Doctoral College

Loughborough University's research contributes to new knowledge and understanding at the very highest levels. We help businesses and industry to compete more effectively, shape public policy and ultimately, help to improve the quality of people's lives.

All doctoral researchers at Loughborough University are welcomed into the Doctoral College, where the vitality, visibility and value of our students is at the heart of our doctoral experience. You will benefit from our extensive doctoral training programme, alongside our suite of activities designed to provide practical and pastoral support at every stage of the research process. We also link with other specialist support services across the University, such as our Careers Network, to enable you to access help and advice in order to realise your ambitions.

This booklet has been designed to tell you more about the Doctoral College and how we aim to support your doctoral experience.

Professor Steve Christie
Associate Pro Vice-Chancellor
(Doctoral College)

WELCOME FROM LOUGHBOROUGH DOCTORAL COLLEGE

Our research degrees

Our PhDs and EngDs give you the flexibility and freedom to carry out original, high quality research, whilst supporting you to solve real-world problems.

Degree	Duration	Key fact
PhD	3 years full-time (6 years part-time)	The highest academic qualification you can attain. Your research must make a significant original contribution to, and show a critical appreciation of, existing knowledge in the subject. Submission by traditional format thesis or, subject to approval, alternative format of journal articles, or similar.
EngD	3 years full-time*	Available in some areas of engineering or applied science. An EngD involves collaboration with industry and combines formally assessed taught modules with innovative research related to real industrial problems.
PhD by Practice	3 years full-time** (6 years part-time)	Available in the areas of Architecture, Design and Creative Arts, and Social Sciences and Humanities, a PhD by Practice accommodates the communication of knowledge that may not be best represented and communicated in written form, allowing innovative practices of research and representation.
PhD in Creative Writing	3 years full-time (6 years part-time)	The PhD in Creative Writing addresses an overarching research question through academic research and a creative component. This could be a cycle of poems, a novel, a section of a novel, a novella, a play script, or a collection of short stories.

**Some funders may provide support beyond this, up to a period of four years.*
***Not available in all areas*

"Loughborough University to me is the epitome of hard work. From the department staff and researchers to the students – everyone strives to be the best. It felt inspiring to be a part of such a machine making waves throughout the research community."

Chris
PhD Physics

"The encouragement from industry and the academic support available to me have enhanced my experience, given me insight into the new directions my career can take me and provided the right opportunities for me to develop and hone valuable skills."

Nafsika
PhD Architecture, Building and Civil Engineering

Why do a doctorate?

At Loughborough, we are looking for doctoral researchers who have active, enquiring minds and are enthusiastic about becoming a world expert in their chosen field to solve vital real-world issues. Studying for a doctorate offers a unique opportunity for self-discovery and personal growth but you will need to be flexible, resilient, tenacious and hard-working.

In return, you will develop expert knowledge in your chosen area and gain a wide range of invaluable skills to enhance your employability and advance your career, whether this be within academia, industry or elsewhere. With strong industry links, we regularly host careers events and offer networking and placement opportunities across a range of sectors. In addition, we invite pioneering international scholars to our Institute of Advanced Studies to promote an outstanding, interdisciplinary research environment to ensure your work is informed by the latest developments, insights and discoveries.

As part of our vibrant research community, you will have the support of the Doctoral College who will help you to achieve your goals, so that one day you can inspire others to achieve theirs.

lboro.ac.uk/why-study-phd

THE PHD PROCESS

The PhD process

PRE-APPLICATION RESEARCH

Your research question provides the framework for your degree. You may apply to work on a specific advertised project or your own novel research proposal. In either case, you should carry out enough research to be sure it is in a subject that you are really interested in and enthusiastic about.

If you are submitting your own proposal, your preliminary research will help you to see what information is already available. This may generate more questions in your mind, which you can develop into your own novel research proposal.

It is key to speak with potential supervisors about your idea before applying, so that you can establish early on whether it has potential to form the basis of a PhD research project.

2

REVIEW EXISTING RESEARCH

Undertaking a review of the existing research and literature in your field is a key step in the PhD process and should build on the research you do pre-application.

In critiquing existing knowledge, you will develop a deeper understanding of the topic and identify how your research will contribute to the subject.

3

CONDUCT YOUR RESEARCH

Different research projects will require different research activities. You will use primary and secondary sources and may undertake fieldwork, interviews, surveys, observations etc.

You will need to establish what information you want to collect, how you will collect it, how you will analyse the data and ultimately, how you will present the data in your thesis.

4

WRITE UP

At the end of your research, you will present a written report of your findings, called a thesis. This includes an analysis of the research you have undertaken and how this addresses your original research question. For those doing a PhD by Practice or Creative Writing, a practical or creative element will be included with the submission of your thesis.

5

THE VIVA

The viva voce is an oral examination which requires you to discuss your research with two examiners, one of whom will be external to the University, who will have reviewed your thesis. The examiners will ask a series of questions and develop a discussion to test your knowledge and ability to defend your research.

6

GRADUATE!

Once you have passed your viva and submitted a final, corrected version of your thesis, you can graduate as a Doctor of Philosophy. Not only does this allow you to put the title "Dr" at the start of your name, it also opens up a world of opportunities in research, academia, industry and many other sectors.

WHY LOUGHBOROUGH?

Why Loughborough?

Our world-class research and passion for student experience have enabled us to create something truly special.

Whether you decide to study at our Loughborough or London campus, you will join a doctoral researcher community from around 100 different countries. This ambitious community of students and staff are committed to helping each other reach their full potential academically, professionally and socially.

We offer:

- a minimum of two supervisors for every PhD student
- opportunities to work alongside leading academics
- dedicated training programmes to hone your research skills
- a real community spirit amongst our doctoral researchers, supported by the Doctoral College
- opportunities for collaboration with other universities and industries to maximise the impact of our research
- careers advice specially designed to support the specific skills and experience of research graduates, whatever your career aspirations
- state-of-the-art facilities for research and sport.

5TH IN THE UK FOR ACCESS TO PHYSICAL RESOURCES AND FACILITIES
POSTGRADUATE RESEARCH EXPERIENCE SURVEY 2021

Both our locations offer something very different. Loughborough is a bustling market town in the East Midlands, where you can explore fantastic countryside and local heritage. London is one of the world's busiest cities and a hub of industry, innovation and creativity, famous for its cosmopolitan culture and fast pace of life.

Whether you are located at our Loughborough or our London campus, you will be within easy reach of thousands of popular destinations across the UK, Europe and beyond, thanks to our excellent transport links.

Previsico, launched in LUinc. and co-founded by PhD graduate Avi Baruch, is accelerating the impact of its next-generation global flood-warning solution which has partnerships with Zurich and BT.

Our research and innovation

As one of the UK's top research universities, Loughborough is renowned for its research quality and relevance to business and industry, as well as its impact on society. Innovation is at the heart of our activities, and there is a strong culture of working with external partners to realise the impact of research.

Helping you achieve impact from your research

Loughborough and London campuses are both distinctive in being co-located with large and diverse innovation communities which provide excellent opportunities for innovation and impact. Loughborough is home to LUSEP, one of the UK's largest science parks with more than 90 companies ranging from start-ups to global brands, with established clusters in net zero and low carbon, and sport, health and wellbeing. London is home to Plexal, a community of 800 tech innovators, and SHIFT; a new collaboration to find creative answers to the major challenges of city life.

lusep.co.uk

Our network, your support

Our Commercialisation Team can support you by assessing and developing ideas arising from your research which have the potential for commercial use or societal or environmental benefit. We then develop and implement plans to bring these ideas to market through licensing or starting a new business – a spinout.

lboro.ac.uk/internal/research-innovation-support

Loughborough Enterprise Network also provides a wealth of support for entrepreneurial students at every stage of their innovation journey; start-up funding may also be available.

lboro.ac.uk/len

Community of entrepreneurs

A growing number of spinouts co-founded by PhD graduates are launched from LUinc., the University's incubator, which brings together graduate start-ups, research spinouts and local start-ups to create a vibrant and highly supportive entrepreneurial community. In addition to dedicated co-working space, LUinc. provides the training, resources and connections you need to establish, grow and succeed – from investor and collaborator connections to cutting-edge research and facilities. Seamless transition to grow-on space is available in LUSEP's neighbouring Advanced Technology Innovation Centre.

You can also build commercial awareness and gain hands on business, enterprise and consultancy training with LUinc.'s innovation community, with support from the incubator team and an experienced sector consultant.

Figura Analytics, launched in LUinc. and co-founded by PhD graduate Rhush Maugi, has developed a rapid testing technology platform to save time and money in several sectors, including the drinks industry.

PhD graduates Beth McMurchie and Richard Wilson work in Foster+Freeman's laboratory at LUSEP, developing unique chemical reagents that enable fingerprints to be recovered from notoriously difficult surfaces in a world-first innovation for forensic science.

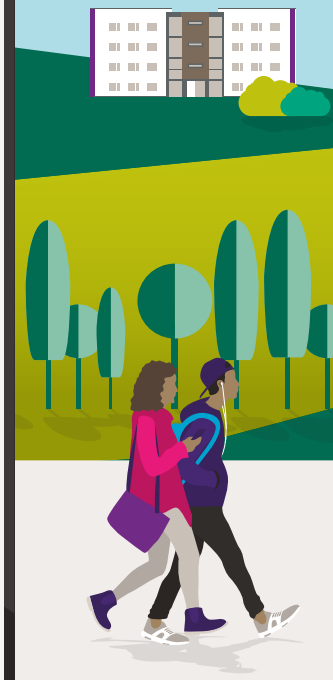
Our research strengths

Our research spans the arts, design, engineering, health, humanities, mathematics, science, social sciences and sports disciplines. We are renowned not just for the quality of our research but also for its relevance to business and industry and its impact on society.

The University has also identified three institutional level themes that will amplify the impact of our research strengths, these being **Sport, Health and Wellbeing; Climate Change and Net Zero** and **Vibrant and Inclusive Communities.**

A significant proportion of our 1,200-strong PhD community can directly map their research onto these themes, contributing to the international reputation that Loughborough University holds in these areas.

PhD opportunities



SCAN FOR CURRENT PHD OPPORTUNITIES

lboro.ac.uk/research/schools-departments

Aeronautical and Automotive Engineering PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in engineering, mathematics or science.

Built on a long successful history, our mission is to deliver world-leading excellence in research, providing translational and transformative technological developments essential for the survival and evolution of the aeronautical and automotive sectors. The department benefits from a unique mix of internationally renowned expertise, along with strong industrial partnerships, contributing to its rich research culture.

State of the art research facilities

The extensive enhancement of the departmental laboratories includes a new autonomous systems laboratory with indoor unmanned aerial vehicle (UAV) testing and extensive vehicle instrumentation. There is now an integrated powertrain, propulsion, energy conversion and storage laboratory, with whole vehicle hub-dynamometer, new electrified powertrain test capability, battery emulation and extreme temperature battery testing capabilities.

The newly opened National Centre for Combustion and Aerothermal Technology (NCCAT) strengthens our world-leading capability of research excellence in low emission aero gas turbines. Access to the High-Performance Computing centre (HPC Midlands Plus) gives unparalleled processing and big data analytical capabilities for computational research.

Our areas of research

Connected and autonomous transportation

Building on internationally recognised research in control of autonomous vehicles, our research now extends to tackle the challenges of connected and autonomous transportation – technological advances in in-vehicle systems, vehicle to vehicle systems and vehicle to infrastructure, improving safety, decreasing congestion and increased freedom of movement. As well as revolutionising health monitoring, risk analysis and mitigation, improved swarm/fleet technology and control, and exploration to new domains (ie agriculture) and their challenges.

Advanced simulation modelling and data-driven engineering

The rapidly changing landscape of automotive technology, including electrification, connectivity and a zero physical prototyping ambition provides the exciting challenge of a new comprehensive approach to digital vehicle engineering. It provides a research platform for integrated, hardware-in-the-loop simulation, development of sustainable and reliable digital twins, latest artificial intelligence and data-driven methods.

Alternative powertrains for transport energy reduction

With the surge for greater eco-friendliness, the emergence of alternative powertrains is key to the future transportation mix. Our research explores the breadth of options, with full electrification, hybrid technology, battery modelling, and hydrogen fuel cells. With the current predominance in the automotive sector of personal and public transportation, movements to explore the design of hybrid, self-generating and super-fast charging systems for electric aircraft provide new and exciting opportunities.

Net-zero combustion

Complex aerodynamic research on novel gas turbine combustor designs for future aircraft, through both experimental and computational studies, is carried out alongside our long-established Rolls-Royce University Technology Centre and within the EPSRC Centre for Doctoral Training in Future Propulsion and Power, in partnership with Oxford and Cambridge. On the automotive side, drag reduction through innovative aerodynamic design, supported by Jaguar Land Rover, and dynamic platooning architectures, coupled with radical developments and research innovations in automotive engine design, lightweight structures and composite materials, combine to create a future vehicle with net-zero emission potential.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Autonomous gas distribution mapping for HAZMAT first response robotics
- Machine hearing for industrial fault diagnosis
- Thermal management of electric vehicles under rapid charging
- Start-up strategies for battery electric vehicles and aircraft in cold climates

Architecture, Building and Civil Engineering PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in a related discipline.

Our doctoral researchers are based in the Research Hub with access to 3,000m^2 lab and high-performance computing facility. Our doctoral researchers are provided with a laptop, support from research experts and technicians, funding for conferences and training courses, social events, and opportunities to support undergraduate teaching as a tutor/lab assistant.

Our areas of research

Architecture

Key research areas focus around building structures and materials, digital fabrication, adaptable architecture, history and theory, and urbanism and heritage. Practising architects can join our new practice-based PhD programme that combines a thesis with evidence of a practical contribution.

Building Energy

This research group focuses on measurement and modelling to produce healthy, high-quality indoor environments with lower energy demand and CO2 emissions. The group's work falls into three main sub themes: Building Components, High-Performance Building Engineering, and Policy Development.

Construction Management

One of the UK's longest established research groups specialising in innovative solutions that enhance the construction, operation and maintenance of complex buildings and infrastructure, including the performance and wellbeing of people, building sustainability, and Building Information Modelling (BIM). Its sub-themes are Digitisation, Whole Life Value and Asset Management, and Procurement and Project Delivery.

Geotechnics and Geomatics

Research in this area develops novel engineering solutions for sustainable and resilient infrastructure, and incorporates topics such as slope stability and the impact of climate change. Particular areas of interest include geotechnical infrastructure asset management and the impact of geohazards on the built environment.

Structures and Materials

Research in this area covers practical and theoretical approaches in Resilient Infrastructure and Cities, Modern Methods of Sustainable Construction, and Advancement of Digital Technologies. This includes greener concretes, more efficient structural design, digital manufacturing, intelligent automation, and methods for determining the performance of structures against earthquakes, fire and wind.

Transport and Urban Planning

This group conducts fundamental, innovative and policy-relevant research in the areas of Air Transport, Autonomous and Intelligent Transport, Passenger Transport, and Smart and Sustainable Cities.

Water Engineering

Research in this area covers Hydrodynamics, Hydrology, Disaster and Risk Management, Sanitation, Hygiene and Water Treatment as well as the Development of Sustainable and Resilient Water Infrastructure, including Management and Policy.

Centres for Doctoral Training

Centres for Doctoral Training combine PhD research and an enhanced research training package into a four-year integrated programme. The school currently participates in two centres:

- EPSRC Centre for Doctoral Training in Water and Waste Infrastructure Systems Engineered for Resilience (Water-WISER), in partnership with the University of Leeds and Cranfield University.
- EPSRC Centre for Doctoral Training in Energy Resilience and Built Environment (ERBE), in partnership with University College London and Marine and Renewable Energy Ireland (MaREI).

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- The functional role of urban public open spaces in urban disaster risk
- Developing data-driven modelling to characterise and quantify energy flexibility of a building
- Blockchain-based construction project governance
- Climate change impacts of flood embankments

Business and Economics PhDs

Entry requirements: A master's qualification in a relevant subject with an average programme mark of 65% or above (or international equivalent) and a good honours degree in a relevant discipline (minimum 2:1). In exceptional cases, substantial professional work experience/qualifications may also be taken into consideration.

At the School of Business and Economics you have the opportunity to study towards a PhD or MPhil in business and management, economics or information science. As a doctoral researcher you will join whichever academic group best suits your research interests to help you fulfill your ambitions.

Our areas of research

Academic Groups are the fundamental areas of teaching and research in which individual staff members and doctoral researchers are grouped, Research Centres represent the key areas of our research strength, and Research Interest Groups are emerging areas of research.

Academic Groups

Accounting and Finance

Areas of expertise include: corporate finance, financial markets, management accounting and corporate governance, and sustainability. Many group members possess professional as well as academic qualifications. A number of group members serve/have served on prestigious academic and practitioner boards, as well as holding editorial positions in key academic journals.

Economics

This group undertakes research in microeconomics, macroeconomics and econometrics, with a view to applying the powerful and flexible tools of economics to both understand and inform the economic decisions of individuals, firms, governments and other institutions.

Information Management

This group undertakes world-leading research on the effective management of information and knowledge assets, investigating big data, mobile technologies, email, social networks and social media, open and linked data, knowledge management in the voluntary sector and much more.

International Business, Strategy and Innovation

This group is committed to world class management scholarship that helps managers make better sense of some of the most complex problems of globalisation and the technology revolution.

Management Science and Operations

Bringing together expertise in operations, systems and decision making – this multidisciplinary group is committed to improving management practice by designing and implementing analytic approaches that help tackle routine, strategic or policy problems. The approaches are typically supported by models that can often be represented mathematically or visually and built using specialist software.

Marketing and Retailing

This group advances knowledge in marketing through high-quality academic and applied research, often with an international perspective. Key areas of expertise include: international marketing, marketing strategy, sales management, B2B marketing, social media, product and service innovation and adoption, marketing ethics, and corporate sustainability.

Work and Organisation

This interdisciplinary social science teaching and research group brings together academics interested in a broad range of 'people management' issues. Psychology and sociology are major disciplinary influences but historical and geographical approaches may also be taken. The group conducts research in the areas of organisation studies, work psychology and employment relations. Output ranges from traditional academic scholarship to work with a significant impact on public policy and management.

Research Centres

The school has developed collaborative Research Centres to further enhance its international reputation and to influence policy and practice across both the public and private sectors.

Centre for Corporate Entrepreneurship and Innovation

This is a joint research centre between the School of Business and Economics and the Institute for Innovation and Entrepreneurship at Loughborough University London. Through research, engagement and international partnerships, the centre provides research and practice-based insights on how executives build, manage and sustain innovative organisations.

Centre for Information Management

The centre's main purpose is to undertake internationally recognised research for the benefit of the individual, organisations, government and society. It aims to evidence the significance and value of information, challenge thinking and practice around information management, and improve performance through analysis, interpretation and judgement of information.

Centre for Productivity and Performance

Research is focused on the different fields of productivity, efficiency and performance measurement, and related areas, such as industrial organisation and decision and risk analysis. Its research aims to assist decision and policy makers in evaluating and improving the performance of firms and public sector bodies.

Centre for Service Management

The centre engages in applied research and scholarship to support the design, engagement and transformation of service organisations, conducting research that matters to organisations across the sectors. It provides new knowledge to inform academics and educate managers through the exploration of theory and practice of service management; and pursues collaborative partnerships in the area of service management.

Centre for Work, Organisation and Society

The centre aims to contribute to leading national and international debates on work, employment and organisations in society. Researchers draw on multidisciplinary perspectives that enable inquiry into psychological, cultural, technological, geographic, political economy and social dimensions of people at work and the organisation of production.

Centres for Doctoral Training

Centres for Doctoral Training integrate PhD research and an enhanced research training package into a four-year integrated programme. The School of Business and Economics is part of the new EPSRC Centre for Sustainable Hydrogen (SusHY) in partnership with Nottingham, Birmingham and Ulster. The school is also part of the University-funded CITHEI Centre for Doctoral Training to understanding cultures of equality, diversity and inclusivity in higher education.

Doctoral Training Partnership (DTP)

Loughborough is proud to be part of the ESRC Midlands Graduate School DTP in partnership with Warwick, Nottingham, Birmingham, Aston and Leicester.

Research Interest Groups

Research Interest Groups are individual clusters of faculty, researchers and PhD students working on a common research theme. These groups evolve over time and represent emerging areas of research strength within the school. For a full list visit our website.

PhD proposals

The following areas of research would be welcomed as PhD projects. You can see the full list on our website: lboro.ac.uk/pg/sbe

- Artificial intelligence – applications, ethics and cultural considerations
- Changing work practices and employee wellbeing
- Corporate finance
- Corporate governance and accountability
- Designing and implementing analytic approaches to aid management decision making
- Digital culture, wellbeing, decentralisation and disintermediation, open data
- Digital technology at work

Chemical Engineering PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in a relevant discipline.

Our multidisciplinary research addresses the current and future challenges facing society through engineering solutions. Our department is a highly active, research-intensive community of around 75 academics, researchers and doctoral students. Benefiting from the expertise and experience of our staff, our thriving community of doctoral researchers are provided with an intellectually challenging and rewarding experience.

Our areas of research

Our research focuses on clean energy, environment, sustainability, healthcare and materials and examines how we can improve our way of life through advanced engineering solutions. The department maintains an interest in the following research topics:

Energy and Environmental Engineering

Research focuses on ways to efficiently use energy and maintain the environment. We investigate cleaner, more efficient ways to use fossil fuels, look at how we can reduce emissions through catalysis, and examine how we can use renewable and sustainable resources such as solar, wind, and wave energy through photoelectrochemistry.

For example, we have investigated the development of technologies to produce low-carbon clean fuels from biomass, water and renewable electricity; undertaken work related to efficient hydrogen production, storage and application via fuel cells for green transportation; and we have looked at the application of plasma and electrochemical technologies for treatment of emerging pollutants in water.

Researchers in this area are on the cutting edge of renewable technologies, such as sustainable hydrogen from seawater splitting and advanced fuel cells, and are continually focusing on key issues relevant to the 21st century.

Bioengineering and Healthcare

This group undertakes world class research that leverages the latest developments in synthetic biology, genetic engineering, and stem cell and tissue engineering.

Bioengineering applies engineering principles of design and analysis to biological systems and biomedical technologies, and provides solutions to tackling global healthcare challenges, such as antimicrobial resistance and enabling cost-effective production of high-value therapeutics. It is a cutting-edge, multidisciplinary subject that aims to improve human health by bridging the gap between health, medicine and engineering.

We focus on advancing research leading to economically viable, sustainable and useful products and processes, ranging from antibiotics and cell and gene therapies to vaccines, bioremediation and bioenergy.

Advanced Manufacturing

We have a leading reputation for our expertise in particle technology. Our research focuses on nano-engineering and micro-engineering of particles regarding their manufacture, formulation and dispersion, and how they interact to make functional materials, interface structures and high-performance devices.

Research in pharmaceuticals manufacturing focuses on digital design, control and optimisation of crystallisation processes to produce purified drug product particles with targeted properties.

We focus on generation and characterisation of nano- and micro-scale particles for a range of end users, including pharmaceutical, energy and food sectors. We have investigated fluid mixing to look at how nanoparticles are incorporated into a liquid, explored the generation and application of nano- and micro-bubbles, and the engineering of nanomaterials for fuel cells, batteries and supercapacitors.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Green hydrogen production from water splitting powered by renewable electricity
- Understanding the lifecycle carbon footprint of hydrogen energy systems
- Electrochemical conversion of carbon dioxide to value chemicals and fuels
- Nanomaterials and electrocatalysis for advanced fuel cells

Chemistry PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in chemistry or a closely related discipline.

We offer industry-relevant research opportunities across a range of areas including energy, markers and detection; crime and security; chemical process technologies; and catalysis and functional molecules.

Our PhD students are encouraged to participate in conferences and present their research in order to widen their perspective and grow their research network.

Supporting you

You will have at least two academic supervisors who will guide you in your research. We provide training courses on research methods, safety, use of instrumentation and IT, and we also offer a regular programme of seminars from visiting lecturers. Our research students attend group meetings and conferences and can gain practical experience of teaching undergraduate students, as well as having opportunities to undertake research placements.

How to apply

Projects which have funding attached are advertised on our website. For self-funded projects or those funded by third-party sponsors, you do not need to submit a detailed research proposal with your application, but you should indicate which area of research you wish to pursue and/or names of staff members you are keen to work with.

Our areas of research

Research is carried out in all areas of chemistry, and we have four main themes in the department:

Energy

Research is focused on innovation in the production and storage of green energy, electrochemistry and photochemistry.

Markers and Detection

The focus is on the discovery and application of markers of health, vitality and disease. New molecular markers provide valuable opportunities for other researchers, as well as different approaches to the management and characterisation of complex situations.

Catalysis and Functional Molecules

The research involves the development of new catalytic methods and reaction chemistries to develop novel functional molecules with applications in health and materials science.

Crime and Security

This research addresses a wide range of societal issues, including the development of new reagents and analytical methods for forensic fingerprint imaging and biofluid analysis; chemical, biological and radiological (CBRN) agent screening and stand-off threat detection in airports and other vulnerable locations.

As part of the School of Science, staff and PhD students may also contribute to our interdisciplinary research centres:

- Centre for the Science of Materials
- Centre for Geometry and Applications
- Centre for Analytical Science
- Interdisciplinary Centre for Mathematical Modelling
- Interdisciplinary Science Centre from Laboratory to Fabrication (Lab2Fab)

Centres for Doctoral Training

Centres for Doctoral Training (CDT) integrate PhD research and an enhanced research training package into a four-year integrated programme. The Department of Chemistry is part of the new EPSRC Centre for Sustainable Hydrogen (SusHY) in partnership with Nottingham, Birmingham and Ulster.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Clean hydrogen production using well defined earth abundant metal-based catalysts
- Experimental methods for the recycling of plastic waste
- Synthesis of novel nanographene and acene dyes for energy applications

Communication and Media PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in a related subject.

Based within the School of Social Sciences and Humanities, communication research at Loughborough began in the late 1980s and has been consistently characterised by a distinctive multi-scale, interdisciplinary approach, ranging from the micro-dynamics of interpersonal interaction rooted in social psychology to the macro-dynamics of mediated communication and culture grounded in political science and sociology.

Our doctoral researchers play an important role in shaping our research effort and culture. We have 343 postgraduates working closely with 130 specialist supervisors.

We use a diversity of methods for data gathering and analysis and work with a variety of partners, including European Broadcasting Union, UK Government (Scientific Advisory Group for Emergencies), Google, Microsoft, European Federation of Journalists, Metropolitan Police, the Alzheimer's Society, English National Ballet and the British Museum.

Our areas of research

Our communication and media research is considered world-leading, with 100% of our research impact rated 4* in the 2021 REF (the highest grade possible).

Culture, Economy and Policy

Our work in this area highlights the role of media and cultural industries, as well as policy, in reproducing existing inequalities, and seeks to understand their potential for encouraging greater cultural participation.

Language and Social Interaction

We work on the foundational structure of human discourse, and how it plays out in face-to-face and technology-mediated interactions. That gives us insight into a range of interpersonal and social phenomena, from intimate conversations in the home, to interactions in institutions as varied as the commercial marketplace, the police and the healthcare professions.

Media, Memory and History

Media, Memory and History is a fast-growing area of expertise at Loughborough which provides a shared focus of research for scholars across the social sciences and humanities. Our researchers work on various aspects of media and communication history, mediated memory, and the relationship between media and time.

Political Communication

We have been at the forefront of international political communication research for over 30 years, examining campaigns, protest movements, comparative media systems, radical politics, democratic deliberation, journalism, political illiberalism, populism, media theory, and social media.

Centre for Research in Communication and Culture (CRCC)

Established in 1991, the CRCC combines social science and humanities approaches to explore the production and consumption of different forms of communication and creative texts. We are interested in exploring how media and cultural texts are produced, how they construct meanings, how they shape the societies we live in, and how they fit within an ever-growing creative economy.

The Online Civic Culture Doctoral Training Centre

This centre applies cutting-edge concepts and methods from social science and information science to understand the role of social media in shaping our civic culture. Interdisciplinary teams of researchers and PhD students from communication, information science, social psychology and sociology work together on issues of misinformation, disinformation and the rise of hate speech and incivility online.

Doctoral Training Partnership

Communication and Media is proud to be part of the Economic and Social Research Council (ESRC) Midlands Graduate School – an accredited ESRC Doctoral Training Partnership (DTP). The DTP awards annually several postgraduate studentships across its various pathways and institutions.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Understanding the spread of online misinformation that rejects scientific consensus: audiences, platforms, and algorithms
- Performing class identities online: migrant workers and social media in contemporary China
- Debating the European Union – dynamics of ideological conflict in political debates

Computer Science PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification or equivalent experience in an area related to computer science.

Our doctoral students join a talented research community that continues to make a valuable contribution to the rapidly developing computer science sector, particularly in areas such as wireless communications, multimedia, logistics, healthcare, the emergency services, transport, surveillance and the environment.

Supporting you

You will receive academic and pastoral support from two supervisors and the Director of Doctoral Programmes. The department also offers a regular, varied programme of seminars with both internal and external speakers, organised social activities and opportunities for research skills training and networking. You will also have access to a workstation, online access to many international journals, access to funds for conference attendance and consumables, and access to library and IT services.

How to apply

Projects which have funding attached (eg through research councils, university funding or industry sponsorship) are advertised on our website and do not require a research proposal.

For self-funded projects or those funded by third-party sponsors, you should include a research proposal of approximately two pages with your application. This proposal should outline the research context, the main aim and objectives of the proposed research, and some indication of the methodology to be used.

Our areas of research

Vision, AI, Autonomous and Human-Centred Systems (VAAH)

This research theme focuses on both theoretical and application aspects in artificial intelligence, computer vision, robotics and autonomous systems, machine learning, bio-inspired AI, pattern recognition, embedded intelligence, image processing, as well as HCI and human-factors. We collaborate extensively with industry to ensure the relevance of its research. We have a very good track record of attracting funding from EPSRC, Newton Fund, Innovate UK, EU, Home Office, NHS and UK industry.

Our research has been successfully applied to a variety of real-world domains which include: service robots, agricultural robots, driverless vehicles, UAVs, underwater robots, human motion analysis, medical imaging, security and surveillance, sports, environment monitoring, ambient assisted living, risk and safety assessment, commodity trading, and manufacturing.

Networks and Systems (NetSys)

Theories and technologies in networking, sensing, control and communication play important roles in the modern world and are expected to remain of great significance in the future. Our research focuses on all aspects of networking and communicating systems, and addresses specific issues related to the internet and control, wireless sensor networks, network performance modelling and measurement, performance evaluation with Quality of Service (QoS) constraints and application performance investigation. Work ranges from the underlying mathematical theory to practical creation and operation of networked systems. Research strengths include internet control, wireless sensor networks, internet QoS and congestion control, coding theory, and accessibility and usability.

Theoretical Computer Science (TCS)

The research of the TCS group covers a relatively wide range of established and emerging fields in theoretical computer science, including mathematical logic, formal languages, computability and complexity theory, numerical analysis, cryptography, geometric computation, algorithmic learning theory and energy efficient scheduling.

As part of the School of Science, PhD students within the department may also contribute to our interdisciplinary research centres:

- Centre for the Science of Materials
- Centre for Geometry and Applications
- Centre for Analytical Science
- Interdisciplinary Centre for Mathematical Modelling
- Interdisciplinary Science Centre from Laboratory to Fabrication (Lab2Fab)

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Autonomous underwater vehicles
- Computer vision and deep learning for real-time action recognition and semantic interpretation of video images
- Lifelong learning neural systems

Creative Arts PhDs

Entry requirements: An honours degree (2:1 or above) or equivalent international qualification. A relevant master's qualification is advantageous.

The School of Design and Creative Arts offers an exciting interdisciplinary research environment where research students work alongside expert staff with a diverse range of interests and experience.

We welcome applications in any of the areas listed in this section. Prospective students are encouraged to explore the research activity of our staff before submitting an application. Our PhD programme allows for either a text-based research project or a practice-based one. The practice-based PhD requires an appropriate presentation of practice-based research and a text of up to 40,000 words; for the fully text-based PhD the word length is 80,000 maximum.

Usually PhD students have two supervisors. Both may come from Creative Arts or if appropriate, supervisors from this area may co-supervise with staff from other parts of the University.

A full application and an interview are necessary before applicants are accepted. Applicants will normally be asked to provide a written proposal outlining their research project, and (in the case of practice-based proposals) images of work or other appropriate documentation.

When considering applying for a PhD, please bear in mind that the generally accepted definition of a doctorate is 'an original contribution to knowledge/theory'. The project proposal should, through the parameters of its aims and its questioning, be written with this in mind.

Our areas of research

Our world-leading research is interdisciplinary, both within the school and across other academic disciplines at Loughborough. We welcome applications from students whose research aligns with our strengths.

We have a longstanding reputation for delivering cutting-edge research projects that span design, creative arts and human factors.

Creative Arts

- Theatre
- Fine Art
- Textiles
- Animation and Drawing
- Creative Writing
- Storytelling

Design

- Digital Design and Fabrication
- Design for Future Living
- Responsible Design
- Graphic Design
- Design Practice

Human Factors

- Environmental Ergonomics
- Transport Safety
- Design Ergonomics
- Complex Systems

For more information on our research areas, staff, and related projects, please see the School of Design and Creative Arts website: lboro.ac.uk/sdca

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Development of advanced, multi-functional upper limb splints and orthotic devices by means of additive manufacturing
- Future body armour design and development
- The BAME creatives: aspirations, perceptions, and impacts within design economies
- Storytelling, animation, and mental health literacy
- Perceived and material quality measurement of recycled polyester sports garments during the product life cycle
- Rethinking nuclear safety – an adaptive approach
- Thermoregulation and thermal comfort of prepubertal children during exercise in cold, neutral and warm environments
- True-life storytelling clubs in the UK and the life-expert performer

Criminology, Sociology and Social Policy PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in a relevant discipline. Applicants without a postgraduate qualification will be required to complete research training in tandem with their doctoral programme.

Based within the School of Social Sciences and Humanities, staff in Criminology, Sociology and Social Policy are active researchers, working within and across disciplinary boundaries.

Our areas of research

Criminology and Social Policy (CASP)

This group of international researchers focuses on the analysis of issues associated with crime and social policy, and on enhancing the relationships between policy and practice. Research in CASP is situated within and across two central agendas: children, young people and families (social policy), and applied criminal justice (criminology), which includes work in the fields of youth justice, probation, prisons and violent crime, and victim-survivors. Staff members contribute widely to agenda setting and thought leadership in their areas of expertise. In addition to publishing extensively, CASP staff also contribute to national policy debates and the evidence-based transfer of policy into practice locally, nationally and internationally.

Sociology

Members of the sociology research team are recognised internationally for contributions to their specialist fields, including social identities and structural inequalities relating to class, gender, race and religion; migration and citizenship; consumption, culture and inequality; health, mental health and biomedicine; digital technologies, economies and cultures; and classic and contemporary social theories. Our academics publish in leading international journals, make regular contributions to public debates by discussing their research findings in national and international media, and have established partnerships with a wide range of stakeholders.

Centre for Research in Social Policy (CRSP)

CRSP is an internationally renowned research centre, specialising in innovative and applied social policy research and critical policy analysis, particularly focused on poverty, income and living standards. CRSP staff collaborate with governments, large funding bodies, policy-makers and practitioners in developing their highly distinctive strategy for research, enterprise and impact. The centrepiece of CRSP's work is the 'Minimum Income Standard', a world-leading, cutting-edge research programme working to reach public agreement on the budget levels required to meet a socially acceptable standard of living, and collaborating with partners in eight countries to apply this method.

The Unequal Academic Citizenship (CITHEI) Doctoral Training Centre

This centre applies cutting-edge concepts and methods from across the social sciences to examine opportunities and barriers for culturally diverse students, staff, and alumni in higher education, with the aim of understanding how individuals, institutions and governments can support the development of ethnic minorities' full potential and mitigate wider challenges to equity goals. Interdisciplinary teams of supervisors and doctoral researchers work together on issues relating to equity, diversity and inclusion across knowledge flows, campus geographies and career trajectories.

Doctoral Training Partnership (DTP)

Criminology, Sociology and Social Policy is proud to be part of the Social Policy Pathway of the accredited Economic and Social Research Council (ESRC) Midlands Graduate School DTP in partnership with Warwick, Nottingham, Birmingham, Aston and Leicester. The DTP awards annually several postgraduate studentships across its various pathways and institutions.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Risk assessments in child protection: consequences on the perceptions of young people as victims
- Exploring female strength and power: an ethnography of strongwoman
- Sexual harassment on the London Underground: mobilities, temporalities and knowledges of genered violence in public transport
- What can a historical analysis of youth justice legislation tell us about the nature of youth justice?

Design PhDs

Entry requirements: An honours degree (2:1 or above) or equivalent international qualification. A relevant master's qualification is advantageous.

The School of Design and Creative Arts offers an exciting interdisciplinary research environment where research students work alongside expert staff with a diverse range of interests and experience.

We will provide you with everything you need to help ensure you have a great experience and are successful in your research. You will have the opportunity to become part of an exciting community of students, academic staff and researchers. Each student will have two supervisors and we will also provide IT equipment, including state of the art software; regular research seminars and training courses; opportunities to support undergraduate teaching; special tutor sessions in your first year; networking and career-focused opportunities; and student-led initiatives to provide support throughout your studies.

Projects that have funding attached (eg through research councils, university funding or industry sponsorship) are advertised on our online prospectus and do not require a research proposal. For self-funded projects you will need to provide a two-page research proposal that summarises your intended research, the objectives, proposed methods and what the outcomes might be. You are encouraged to explore the research activities of our staff and identify potential supervisors. A full application and interview are necessary before applicants are accepted.

Our areas of research

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For more information on our research areas, staff, and related projects, please see the School of Design and Creative Arts website: lboro.ac.uk/sdca

Examples of PhD project titles

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- The BAME creatives: aspirations, perceptions, and impacts within design economies
- Storytelling, animation, and mental health literacy
- Perceived and material quality measurement of recycled polyester sports garments during the product life cycle
- Rethinking nuclear safety – an adaptive approach
- Thermoregulation and thermal comfort of prepubertal children during exercise in cold, neutral and warm environments
- True-life storytelling clubs in the UK and the life-expert performer

Design Innovation PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification.

The Institute for Design Innovation welcomes explorative research proposals with novel methodologies and creative approaches to the grey areas of design research.

The institute is currently engaged in research with a focus on the use and application of design knowledge, skills and approaches in various contexts.

Through pursuing one of our postgraduate research programmes, research students will have the opportunity to work with top researchers and industry leaders, and gain first-hand experience of real-life problem solving.

Our aim is to create a vibrant, enthusiastic and forward-thinking community, where world-leading academics and talented students work closely together to research world-leading inventions.

Our areas of research

The Institute for Design Innovation has an interest in pursuing issues in design that are at the vanguard of design research, and which have the potential to deliver outstanding outcomes for design research and practice. The thematic areas include, but are not limited to:

Design Delivery

This research area examines the role of design and designers in entrepreneurship, sustainable product service systems, social enterprises and services, and the circular economy through concepts such as innovation ecosystems.

Design Exploration

This area investigates exploratory topics, imaginative contexts and novel methodologies of design and its relationship to the socio-political.

Design Meaning

This research area examines design-driven innovation of experience and meaning in design and innovation in the context of culture, society, communication and media.

Design Practice

This area of research investigates creative and design-driven contexts by exploring collaborative, interdisciplinary and multicultural practices and approaches, drawing on theories of social practice, amongst others.

Design Value

This area of research is focused on understanding the multiple ways of interpreting value and their relation to design, through the application of design into multiple contexts involving users, organisations, ecosystems and society.

Career prospects

As well as providing a route into academia, studying a PhD will give you the expertise and skills required to advance your career in a wide range of professions, vocations and businesses.

Doctoral Training Partnership (DTP)

The Institute for Design Innovation participates in the *AHRC techné DTP*, in partnership with eight institutions from across the South East. The programme aims to support outstanding students pursuing the 'craft' of research through innovative interdisciplinary approaches with an emphasis on creativity and practice.

Digital Technologies PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification.

The Institute for Digital Technologies offers research expertise and experience in a wide range of subject areas. Our academics are leading researchers in their field, and are extremely well networked with professionals in a range of industries and sectors.

By pursuing postgraduate research, students will have the opportunity to work with top researchers and industry leaders, and gain first-hand experience of real-life problem solving. Our aim is to create a vibrant, enthusiastic and forward-thinking community, where renowned academics and talented students work together to research world-leading digital technology applications and solutions.

Prospective students with a desire to conduct high quality research, push the frontiers of knowledge and create a real impact are encouraged to contact the Institute for Digital Technologies before submitting an application.

Our areas of research

Current research within the institute focuses on several themes, some of which are:

Intelligent and Autonomous Systems

Multi-modal data processing and fusion to support robust decision making in autonomous systems, trustworthiness in autonomous systems, explainable artificial intelligence approaches, applications of autonomous systems in areas including transport, healthcare and assisted living, manufacturing and finance.

Market Intelligence and Personalised E-Commerce

Consumer decision making, perception and trust triggered by virtual presentation and information disclosure, consumer profiling and digital psychological metrics through online user activity, social network analysis and insight generation, recommendation algorithms and their impact on consumer choices.

Sports Analytics and Artificial Intelligence in Sports

Multi-modal data processing and analysis for insight generation into physical athlete performance, tactical performance and risk factors, understanding of team-level tactics and decision-making patterns through computer vision and machine learning models.

Human Behaviour Analysis and Human-Computer Interfaces

Affective computing, emotion and cognitive state recognition through computer vision and biometric signal processing techniques, activity recognition and monitoring, and event detection.

Trust, Identity, Privacy and Security

Privacy-preserving data processing techniques, advanced cryptographic techniques, user activity and modelling, identification, evaluation and mitigation of emerging cyber-threats using advanced signal processing and machine learning methods.

Interactive and Immersive Multimedia Systems

Processing, transmission and evaluation of emerging high-volume multimedia formats, including virtual reality media such as omnidirectional and volumetric video formats, ultra high definition media, and immersive audio formats, network design for delivering interactive and immersive multimedia applications, and quality evaluation for emerging media applications.

Career prospects

As well as providing a route into academia, studying a PhD will give you the expertise and skills required to advance your career in a wide range of professions, vocations and businesses.

Diplomacy and International Governance PhDs

Entry requirements: A master's qualification or equivalent in a relevant subject and a good honours degree in a relevant discipline (minimum 2:1). In exceptional cases, substantial professional work experience/qualifications may also be taken into consideration.

Research is at the heart of the Institute for Diplomacy and International Governance. We bring interdisciplinary and innovative thinking to real-world, international problems. Our research networks include academics from around the world as well as professionals working outside of academia. Our London campus, with its entrepreneurial emphasis, facilitates easy access to decision makers and practitioners of all kinds.

If you are interested in addressing complex, international issues and developing your professional research skills, then pursuing a PhD in the Institute for Diplomacy and International Governance could be for you.

By undertaking a PhD with us, you will have the opportunity to work with top researchers and their professional networks, and gain first-hand experience of real life problem-solving.

Our areas of research

Academics from the Institute for Diplomacy and International Governance offer research expertise and experience in a wide range of subject areas. They are extremely well-networked with professionals outside of academia in their respective fields.

Since our beginnings in 2017, we have tracked the negotiation of the UK's withdrawal from the EU (Brexit), and asked many questions about the future of the EU on the world scene. Take a look at our blog for examples: https://blog.lboro.ac.uk/london/diplomatic-studies

We have explored the significance of Covid-19 for global security, political leadership and citizens' protest. You can find out more in our mini series, The effect of COVID-19 on diplomacy: lborolondon.ac.uk/institutes/diplomacy-international-governance/mini-series-covid-diplomacy

Through our programme of visiting speakers running since 2020, we have heard from leading scholars on topics including minority rights and structural discrimination; digital diplomacy; China's interests in the Mediterranean; sports diplomacy; gender and international security; the value of 'imagined conflicts' as an educational tool in conflict resolution; the UK's climate diplomacy, agency and structure in non-western political thought, diplomacy and inequality (at the UN); and international efforts to defend LGBTQI rights in sub-Saharan Africa. Take a look at our IDIG Speaker Series to find out more: lborolondon.ac.uk/institutes/diplomacy-international-governance/idig-speakers-series

From 2021-22 we scrutinised the UK's climate diplomacy and our PhD students began to deliver their findings in fields including UK public policy regarding radicalisation and extremism; the Europeanisation of Northern Ireland's political identity in the time of Brexit; narratives and myths of contemporary Polish foreign policy; public diplomacy and women's empowerment in Ukraine; foreign policy and domestic Turkish politics; and experimentalist governance in Europe in times of crisis. Take a look at our doctoral researchers section to find out more: lborolondon.ac.uk/institutes/diplomacy-international-governance/doctoral-researchers

Career prospects

As well as providing a route into academia, studying a PhD will give you the opportunity to develop the expertise and skills required to advance your career in a wide range of professions, vocations and businesses.

English PhDs

Entry requirements: An honours degree (2:1 or above) or equivalent international qualification in a related subject.

Based within the School of Social Sciences and Humanities, staff in English are active researchers, working within and across disciplinary boundaries.

The School is home to 343 postgraduates working closely with 130 specialist supervisors who are located in one of five divisions:

- Communication and Media
- Criminology, Sociology and Social Policy
- English
- Geography and Environment
- International Relations, Politics and History.

Research in English is rigorous, creative and impactful. It offers a fertile environment for innovative research. The research community in English is lively and diverse and is driven by a desire for exploration, knowledge and experimentation. We combine theory and practice, and explore a wide range of areas including conducting interdisciplinary research. The breadth of our research along with our collaboration with external partners means that our work has a meaningful impact in the world.

Our areas of research

Research in English includes wide historical coverage from the 17th century to the present moment. In addition to prose, life writing and poetry, we also work on creative writing, drama, film and American literature.

The following list constitutes our research areas and research groups:

Contemporary

A distinct research strength of staff and postgraduates at Loughborough is our attention to 'the contemporary'. We ask critical questions about how the contemporary is experienced, theorised, produced and contested across contemporary culture.

Cultural Currents 1870-1930

Cultural Currents 1870-1930 researches the literature and culture of the late-Victorian and Modernist periods. Its work encompasses literary and cultural criticism, textual editing, digital scholarship and publishing history, with interdisciplinary links to visual art, politics, history, and gender and sexuality studies.

Digital Humanities

DH@lboro is an interdisciplinary research group in the digital humanities, providing a regular forum for discussion and knowledge exchange on all aspects of digital humanities, digital media and digital environments.

Early Modern Culture

We have expertise in literature from the Renaissance to the early Enlightenment, including key areas such as drama and performance; health and wellbeing; and politics and religion. A key aim of our research is the integration of historical understanding of the period into readings of literary works.

Gendered Lives

Our research into gender, how it is experienced, and represented, involves the examination of life-narratives and their representations, the study of diaries, letters and personal documents, the writing of poetry, fiction, and auto/biography, and theory on gender, sexuality and feminism.

Health Humanities

Our research explores the intersection of English, humanities, health, healthcare and wellbeing. We have particular interests in mental health in the 19th century; ageing and contemporary culture; early modern dietary culture; and early modern women's health, pregnancy and childbirth.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- 'The Translatress in her own Person speaks': How Aphra Behn re-framed dynamics of love, courtship, and desire, using her French sources
- Feeling Things and First Wave Feminisms: The haptic experience in women's short fiction, 1880-1930
- Writing as Other: Investigating the 'Right to Write' in fictional representations of disability with a creative response
- Native Americans and Questions of Violence in US Literature, 1827-1884

Geography and Environment PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in geography or a related discipline.

Based within the School of Social Sciences and Humanities, academic staff in Geography and Environment are active researchers, working within and across disciplinary boundaries.

Most importantly, we provide an inclusive research environment where doctoral students and academic researchers work closely together to develop their research careers.

Our areas of research

We are constantly pushing the scientific boundaries of geographical and environmental research, setting new intellectual agendas and advancing conceptual, theoretical and methodological debates.

Our research was recognised in the most recent Research Excellence Framework (REF 2021), with 100% of our research impact rated as 'world-leading' or 'internationally excellent'. We pursue answers and solutions to challenging questions and problems across the social and natural sciences. Our six interdisciplinary research strengths are:

Cities

As the home of the Globalization and World Cities (GaWC) research network for over 20 years, our cities research is recognised internationally for theorising and mapping new geographies of globalised urbanisation, advancing the development of relational approaches in urban analysis, and its empirical depth.

Children, Youth and Families

At the forefront of establishing children's geographies, our research explores formal and informal spaces of education and childhood experiences. Current work is challenging the liberal founding conceptions of children's geographies and examining the geographies of private tutoring, youth volunteering and outdoor education.

Climate-Water-Energy

We are recognised for our world-leading interdisciplinary research around climate compatible growth and the provision of safe, low-carbon energy alternatives in the Global South. We currently lead multi-year research programmes in excess of £75 million, working with partners including the World Bank and the UK Government.

Hydroclimate, Risks and Resilience

Our work on extreme heat, urban flooding and catastrophe modelling aims to reduce the vulnerability of communities and strengthen the resilience of infrastructure to climate change and increasing hydroclimatic risks.

Migration and Nation

Our research is transforming understandings of how powerful migration forces and ideas about migration and nation affect contemporary societies. We examine how and why social groups are mobile within national boundaries, as well as factors underpinning international migration, such as human trafficking, asylum seeking, international student mobilities and migration industries.

Understanding and Managing Environmental Change

Our research on freshwater environments, their limnology, ecology and geomorphology emphasises the interactions between biotic and abiotic components for local and global processes, including carbon cycling.

Doctoral Training Partnership (DTP)

Geography and Environment is part of the Central England NERC Training Alliance DTP in partnership with the Universities of Birmingham, Leicester, Warwick, Cranfield and the Open University, and the National Centre for Earth Observation, National Centre for Atmospheric Science, Centre for Ecology and Hydrology and the British Geological Survey. It provides three and a half years of PhD study with a framework of additional training, and personal and professional development.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Evaluating physical climate risks to the financial sector
- Tropical lake ecosystems in the Anthropocene: Quantifying recent human impact on crater lakes in western Uganda
- Social difference in young women's experiences of higher education and transitions to work
- The impact of clean energy adoption on the livelihoods of low-income, urban enterprises

Innovation and Entrepreneurship PhDs

Entry requirements: An 2:1 honours degree or equivalent international qualification.

The Institute for Innovation and Entrepreneurship works collaboratively with organisations from a number of industries and sectors. As well as providing access to primary data from a broad range of sources, these collaborations help to shape the research focus of the institute and ensure research is delivering impact for industry and society.

The Institute for Innovation and Entrepreneurship is focused on understanding innovation and entrepreneurship in a variety of contexts. Current research explores how innovation may be harnessed to start, grow and sustain organisations, and how entrepreneurial behaviour can address social problems in today's rapidly evolving world.

Our areas of research

The Institute for Innovation and Entrepreneurship is committed to delivering research that is academically excellent and adds social value by addressing some of the problems facing the world today.

This type of research is particularly relevant for those with a research interest in entrepreneurship and innovation. Our key areas of interest are listed below:

Corporate Governance

- state capitalism
- corporate governance: board structures
- comparative corporate governance
- corporate data responsibility and big data
- executive compensation, executive turnover and impact on decision making

Digital Innovation

- digital enterprise
- online entrepreneurial activity

Disruptive Technologies

- redistributed manufacturing
- maker-spaces
- big data
- data-enabled capabilities
- Internet of Things

Entrepreneurship and Innovation

- formal and informal entrepreneurship
- university spin-outs
- contextual influences on strategic entrepreneurship
- corporate entrepreneurship
- social entrepreneurship
- creative and cultural industries enterprise
- ethnic minority enterprise
- gender, intersectionality and entrepreneurship
- business model innovation
- entrepreneurship ecosystem
- innovation ecosystem

Family Businesses

The impact of 'family' on firm strategy, decision making and ultimately firm survival, including but not limited to:

- innovation and entrepreneurship
- new business formation
- governance including boards, trustees and family councils
- corporate social responsibility
- the darker side of family firms (employee relations, family exit, firm failure)

Career prospects

As well as providing a route into academia, studying a PhD will give you the expertise and skills required to advance your career in a wide range of professions, vocations and businesses.

International Management PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification.

If you are interested in globalisation and the contemporary changes in the world economy, or the rise in economic and political power of the BRIC countries and other emerging market economies, a PhD with the Institute for International Management could be for you.

By undertaking research with the Institute for International Management, you will develop a range of new skills through creative thinking, analytical reasoning and real-life problem solving. Presenting at research conferences and events will also enable you to improve your speaking and networking skills, and could provide you with new opportunities to travel overseas.

The Institute for International Management is led by a team of world-class scholars, with an impressive track record of attracting high-profile research grants for research into many aspects of international management.

Our areas of research

The Institute for International Management is actively engaged in international research projects concerning the globalisation of economic activity and the implications for patterns of work, sustainability, (political and other) risks, and governance.

Comparative political economy of work

This research area focuses on the comparative and historical analysis of work and employment relations within Europe and North America. This includes investigating models of global best practice for work organisation and labour management, such as lean production and business process re-engineering.

Corporate (ir)responsibility

This research area focuses on two broad phenomena. Firstly, the adoption of various social and environmental responsibilities by business firms, and the relationship of this phenomenon to urgent sustainability issues.

The second phenomena being organisational wrongdoing (corruption, fraud, tax evasion, human rights violations etc.) and the various severe harms it produces to vulnerable groups and areas.

Gender and identity in a turbulent space and time

This British Academy/Leverhulme funded project investigates how an extreme form of transnational employment – that is, diplomatic assignments – impacts on gender and identity from a social network perspective.

Globalising actors/activists in multinational companies

The institute is currently involved in a major ongoing ESRC funded project investigating globalising actors, namely those who create, disseminate and implement new global norms in multinational companies.

Populist backlash against globalisation and democratic backsliding

This research area focuses on how multinational and domestic companies assess and manage political risks stemming from populist governments that challenge the liberal economic and political order.

The internationalisation of firms from emerging economies

Focusing on the rapidly growing outward foreign direct investment (OFDI) from emerging economies, this research area seeks to understand the institutional determinants and consequences of OFDI from emerging markets.

Career prospects

As well as providing a route into academia, studying a PhD will give you the expertise and skills required to advance your career in a wide range of professions, vocations and businesses.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- The international linkages of capitalist growth models
- Institutional perspectives on emerging market multinationals' adoption of Corporate Social Responsibility (CSR) practices

International Relations, Politics and History PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in a relevant discipline. Applicants without a postgraduate qualification will be required to complete research training in tandem with their doctoral programme.

Based within the School of Social Sciences and Humanities, staff in International Relations, Politics and History are active researchers, working within and across disciplinary boundaries.

Supporting you

You will be assigned two supervisors who are international experts in their respective fields plus an internal reviewer and a Director of Doctoral Programmes.

This team provides tailored academic and pastoral support throughout your studies. The school runs an extensive programme of research training and you will have the chance to participate in and run seminars and discussion groups. These will help you integrate into the school's academic community and develop skills that will enable you to present your work at national and international conferences. You will be provided with access to a shared office with networked PC and specialist software, and allowances for photocopying, conference attendance and inter-library loans.

How to apply

For anyone who wants to apply – those with funding or self-funded – you are strongly advised to contact us before making an application. This will allow us to ensure that supervision is available and that your proposal falls into an area of established expertise. It also helps us put you in touch with our academics if you want to discuss your ideas informally before you apply.

Our areas of research

Democracy and its Challenges

Researchers analyse the empirical and philosophical challenges facing democratic states including the rise of populism, democratic decline, climate crises, poverty (with colleagues in Criminology, Sociology and Social Policy) and political communication and the role of elites in framing and shaping citizens' perceptions of politics (with colleagues in Communication and Media). Researchers in this theme also explore new directions in the theory and practice of democracy, including the role of interest groups, social movements, and protest movements such as Occupy, Black Lives Matter and Extinction Rebellion. Their research incorporates both conventional and radical theories of state authority and rights. Our researchers shape the study of anarchist theory and history through their leadership in national and international research networks like BISA, the PSA, and the Anarchist Studies Network. Our Populism Research Group has an international reputation for excellence and methodological innovation in the theory and practice of social movements.

Security Studies

Established in 2015, colleagues from across the University investigate human security challenges such as human trafficking and modern slavery; how states remain resilient in a context of political, military and economic change; how communities recover after war, mass killing and terrorist atrocities; and how states and citizens manage the transition from war to peace. Researchers advise governments on defence, Covid-19 and migration security, shaping policy debates on the national and international stage.

Diplomacy and Global Politics

Diplomacy and Global Politics extends our European Studies expertise into emerging areas of intellectual and public concern. It encompasses new work into regional politics, including the theory and practice of future EU/UK relations, the economic impacts of Brexit and, with colleagues in Geography and Environment, the practical implications of migration. Recent expansion has enabled additional focus on post-colonial politics and area specialisms, with researchers now working on the politics and history of Afghanistan, China, Colombia, France, Greece, India, Japan, Russia and the post-Soviet space, Spain, Sri Lanka, Turkey and the US.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Ontological fantasies and geopolitical imaginations: President Erdoğan's Turkey in the Middle East and Africa
- Memory, oral histories and archives in eco anarchist resistance
- The security intelligence services of the private sector
- How has the rise of China complicated the defence relationship between South Korea and the United States

Materials PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in a relevant subject.

Our research activity focuses on today's global challenges, including sustainability, nanomaterials, composites, and processing. We adopt a highly multidisciplinary approach to our research and interact with both industrial and academic researchers around the world.

Benefiting from the expertise and considerable experience of our staff, our thriving community of postgraduate research students are provided with an intellectually challenging and rewarding experience.

Our research is supported by a range of first-class facilities, which have been designed to help you throughout your studies and fully equip you for your future endeavours. You will have access to state of the art equipment for use in materials synthesis, processing and characterisation; the most notable of these is the Loughborough Materials Characterisation Centre, which has a wide range of analytical techniques, including electron microscopy and surface analysis, some of which have capabilities that are unique in the UK. Industry relevance is also a priority and many of our research projects are industry sponsored, with scientists and engineers from industry contributing to our output.

The breadth of our work is captured in our research areas, which are delivered by an exceptional team of around 80 academics, researchers and PhD students. We have a strong track record of collaborations with industry with all parties benefiting from access to our state of the art facilities.

Our areas of research

Our research focuses on how we can manipulate materials to solve everyday problems and to ensure the safety and reliability of the materials around us. As such, we maintain an interest in the following research topics:

Processing

The aim of processing is to develop the structural features of a material needed for the finished product to perform well in its intended application. Research in this area studies and develops techniques to convert a material from its raw state to a finished article, and looks at altering and optimising materials on a microscopic level.

Advanced Materials

High-value products often require parts which are challenging to manufacture, due to their scale, complexity or precision; or which must be manufactured from high-performance materials capable of dealing with harsh or challenging operating environments. Our research investigates materials to support the most challenging of applications, from high-performance ceramics to advanced surface modification processes.

Among the materials we are working with are composites and nanocomposites, polymers and adhesives, steels and alloys, metallic glasses and biomaterials. Our investigation into modern materials allows us to predict their properties, performance, reliability and structural integrity, as well as the components and structures made from them, making them safer and more reliable and cost-effective for everyday use.

Soft Matter

Research here deals with a vast array of macromolecules, from their synthesis to their interactions at a microscopic level. It involves squishy materials such as polymers, liquid crystals, foams, gels and colloids. We use techniques such as optical manipulation, and light, X-ray and neutron scattering to understand how the macroscopic physical properties of these soft materials work and how they can be applied to everyday life. An ongoing research area is to develop polymer composite wind turbine blades which are 'stealthy', so not detected by radar, which makes air traffic over these structures safer.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Additive manufacturing of smart footwear components for biomedical application
- Polar nano-ceramics for solar fuel generation
- Biodegradable polymer substrates with controllable sizes and morphologies for tissue engineering applications
- Design and synthesis of functional latex/silica nanocomposite films via colloidal self-assembly

Mathematics Education PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in mathematics, education, psychology or a related discipline. It would be an advantage in some cases to have an MA/MSc in mathematics education, educational/psychological research methods or in a related discipline.

How to apply

Funded projects (eg through research councils, university funding or industry sponsorship) are advertised on our website.

All applicants must submit the following to accompany their application:

- a one-page CV summarising relevant experience and skills
- a one-page cover letter describing their reasons for wishing to undertake research in their chosen area and the personal qualities they will bring
- a two-page essay on one or more issues affecting teaching/learning in mathematics and related to your proposed area of research. This should be a specially constructed piece of writing, making reference to relevant academic literature.

For self-funded projects or those funded by third-party sponsors, in addition to the above requirements, please indicate on your application the area in which you would like to study and the person with whom you would like to work, if appropriate. You are strongly encouraged to contact this person ahead of making an application to discuss your interests and possible research topics.

Our areas of research

Mathematical Cognition

Our research focuses on understanding the processes by which students come to understand mathematical ideas, with a view to improving educational practice. Our researchers have a particular reputation for their work on numerical cognition and mathematical reasoning. In 2019, funding from Research England allowed us to establish a new Centre for Mathematical Cognition, with dedicated staff, refurbished labs and new research equipment. As a result Loughborough now hosts one of the largest mathematical cognition research groups in the world.

Notable recent projects in this area have studied the different roles of executive functions in procedural and conceptual aspects of mathematics across childhood and adolescence (funded by the ESRC and Royal Society), the role of children's spontaneous attention to numerical aspects of the environment in their school mathematics achievement (ESRC) and expert/novice differences in mathematical reading strategies (HEA, OUP and ESRC).

Educational Design and Evaluation

Our research on educational design and evaluation aims to design, develop and evaluate pedagogical interventions, based on a rigorous understanding of students' learning processes. We research how mathematics tasks, lessons and curricula may be designed and implemented in classrooms in schools and colleges to support students' learning of mathematics. We also contribute to debates across education about the ways in which evidence can and should inform practice.

Notable recent projects in this area have included a systematic evaluation of how much new information is provided by rigorous large-scale randomised controlled trials, of the type commissioned by the EEF and NCEE.

Higher Education Pedagogy

Colleagues have expertise in a broad range of areas related to the analysis of teaching and learning of university mathematics, including different approaches to assessment, the measurement of conceptual understanding, mathematical reasoning development and expert mathematical practice.

Notable recent projects in this area have investigated the extent to which post-compulsory mathematical study develops general reasoning skills (funded by the Royal Society), and student difficulties at the transition to higher education (funded by HEFCE).

Doctoral Training Partnership (DTP)

The Department of Mathematics Education is proud to be part of the ESRC Midlands Graduate School DTP in partnership with Warwick, Nottingham, Birmingham, Aston and Leicester.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Out of the classroom and into the wild: Mathematics anxiety in real-life contexts
- The cognitive mechanisms of working memory resource depletion
- Investigating the role of problem posing in cognitive load

Mathematical Sciences PhDs

Entry requirements: An honours degree (high 2:1 or above) or equivalent international qualification in mathematics.

Loughborough's Department of Mathematical Sciences is committed to driving forward innovation across the teaching and research of both pure and applied mathematics.

Active in high quality research across the broad spectrum of mathematics, the department has an excellent international reputation. Research themes within the department include analysis, dynamical systems, geometry and mathematical physics, linear and nonlinear waves, mathematical modelling and statistics.

As a PhD student in the Department of Mathematical Sciences, you will be part of a vibrant community of researchers from around the world. The department hosts regular seminar series and colloquia, as well as international conferences and workshops. As part of the School of Science, staff and PhD students contribute to our interdisciplinary research centres:

- Centre for Geometry and Applications
- Interdisciplinary Centre for Mathematical Modelling

Our areas of research

Analysis and PDEs

The research interests of the group include analysis of PDEs, including microlocal, spectral and harmonic analysis, eigenvalue estimates for Dirac and Schrödinger type operators, inverse spectral transform methods for integrable PDEs, applications to approximation theory, as well as other topics.

Dynamical Systems

This group studies a wide range of aspects of dynamical systems theory, such as Hamiltonian and dissipative dynamics, dynamical chaos in classical and quantum systems, dynamics of multi-scale systems, ergodic theory, random matrix theory, and bifurcation theory.

Geometry and Mathematical Physics

The research of the group covers a broad range of topics in geometry and related areas of mathematical physics, including the theory of both classical and quantum integrable systems. Another research focus is algebraic geometry; in particular, birational geometry and mirror symmetry.

Linear and Nonlinear Waves

The group's interests are in wave motion in a variety of physical situations including geophysical fluid dynamics, water waves, solid mechanics, electromagnetism and acoustics. The group develop and apply exact, numerical, asymptotic and perturbation techniques to pursue research on linear and nonlinear waves with a focus on solitary waves and soliton theory, stochastic wave systems, wave generation, and diffraction and scattering by obstacles.

Mathematical Modelling

Members of the group apply a variety of techniques from applied mathematics to diverse problems in medicine, biology, fluid dynamics, materials and soft matter science. The biological systems studied range from intracellular processes to those at the scale of organisms and populations. The fluid flows studied range from environmental buoyancy-driven flows to technologically important micro- and nano-fluidic flows.

Statistics

This group is involved in methodological research in contemporary issues in mathematical and computational statistics, as well as in making diverse applications to the natural, biological and social sciences, such as engineering, medical imaging, materials science, ecology, testing theory, biostatistics, etc.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Bayesian marathon finish-time prediction
- Numerical modelling of brain tumours by Cahn-Hillard type equations
- Using statistical machine learning to design particles for drug delivery

Mechanical, Electrical and Manufacturing Engineering PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in a relevant discipline. A relevant master's degree or industry experience is advantageous and for some research projects, may be mandatory.

Home to almost 250 academics and research staff with more than 160 postgraduate research students, the school hosts four of the University's major research centres – the Centre for Renewable Energy Systems Technology (CREST), the Centre for Intelligent Automation, the Centre for Biological Engineering and the Sports Technology Institute.

With active research programmes funded by EPSRC and other UK and EU research councils worth over £45 million and with the support of over 100 industrial partners, the school delivers impactful research and an exceptional educational experience.

Our five research units reflect the broad interests and expertise of the staff and postgraduate students within them and offer new doctoral researchers the opportunity to join a vibrant international community to work together on world-leading engineering solutions to today's global challenges.

Our areas of research

Energy and Power Engineering

Hosting nationally leading laboratories that span materials characterisation, energy systems performance and the UK's only ISO-accredited PV test laboratory, CREST has been pioneering renewable energy generation, distribution, end-use demand and storage for more than 25 years. Our work includes energy in buildings, solar photovoltaics, grid connection and integration, and energy storage including hydrogen.

Solid and Fluid Mechanic

Working closely with the automotive industries we apply a unique range of computational modelling and optical diagnostic methods to the analysis of mechanical systems. The Mechanics of Advanced Materials Group is a prolific, internationally recognised group, renowned for its work on structural integrity, ultrasonic machining and composite components. Our work in fluids is supported by the HPC Midlands+ Tier-2 High Performance Computing Centre and the Supercomputing Facilities at the European Centre for Medium-Range Weather Forecasting.

Systems and Automation

Our fundamental research concerns the architecture and principles of engineering that underpin complex systems and their implementation under ISO-standards. Working closely with the Manufacturing Technology Centre, our Centre for Intelligent Automation addresses future manufacturing challenges including human-machine interaction, using state of the art machine learning, advanced control systems, and virtual/augmented reality techniques to meet demanding, application driven needs.

Electronics and Communications

Advancing electronic communications through our world-leading research in devices and signal processing algorithms, we are progressing the future of wireless networks including 5G and beyond, the Internet of Things and autonomous vehicles. We have unique expertise in antennas, metamaterials, artificial intelligence, environmental sensors, signal processing and network security.

Manufacturing Processes

Our work concerns manufacturing challenges across multiple sectors. With the Centre for Biological Engineering we address barriers to the cost-effective manufacture of advanced cell-based therapies and medical products while our sustainability group addresses the issues concerned with disposal devices and PPE. With the Sports Technology Institute, we work closely with the major sporting brands on the design, simulation, testing and manufacture of sporting goods.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Microstructure and performance of thin film CdTe solar devices
- Cyclic deformation, fatigue crack initiation and growth in a nickel-based single-crystal superalloy
- A model for assessment of human assistive robot capability
- Wireless sensor system for monitoring the motion of swimming
- Advancing the manufacture of forward programmed megakaryocytes for blood platelet products

Media and Creative Industries PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification.

The Institute for Media and Creative Industries boasts a talented, international and close-knit research community, with a shared passion for the growth and impact of research on communication and media content, technologies and structures.

By pursuing a postgraduate research programme within the Institute for Media and Creative Industries, individuals will have the opportunity to work with top researchers in the field and gain first-hand experience of real-life problem solving.

If you are interested in undertaking theoretically informed research that aims to impact the policies and practices of the media and communications industry, the Government and the third sector then a PhD with the Institute for Media and Creative Industries could be for you.

Our areas of research

The institute maintains a strong interest in the relationships between media and communication and technological, social and cultural change. Current research considers the implications of technological transformations and social change, including social, cultural, political and economic relationships and movements, as well as social media and activism in contemporary and historical contexts.

Much of the research in the institute is collaborative and interdisciplinary, connecting to local and global communities and organisations. The institute also works with community groups, cultural institutions and global agencies to explore the applications of their latest research.

As a whole, the institute has a particular strength in ethnography, participatory approaches, oral histories, archival research and textual analysis. The institute explores the application of these methodological approaches to critical studies of gender, sexuality, identity, race and ethnicity.

The institute is also interested in notions of mobility (people and technologies), place, creativity and labour, and the communication practices and infrastructures that connect and disconnect, enable and constrain.

Our academics cover a range of research interests including legacy and new media and communication structures, regulations and practices. The institute has experience of conducting empirical research across the globe and is particularly interested in global perspectives on media, communication and social change.

Career prospects

As well as providing a route into academia, studying a PhD will give you the expertise and skills required to advance your career in a wide range of professions, vocations and businesses.

Doctoral Training Partnership (DTP)

The Institute for Media and the Creative Industries participates in the *AHRC techné DTP*, in partnership with eight institutions from across the South East. The programme aims to support outstanding students pursuing the 'craft' of research through innovative, interdisciplinary approaches with an emphasis on creativity and practice.

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Art activism in India: A narrative of communication and dissent
- An exploration of spoken word poetry communities, digital media and inclusion
- Cultural policy, museums and urban revitalisation: The cultural citizenship and political uses of difference in Brazil
- Gender, people-centred social innovation and youth media work in Tanzania
- Storytelling personal collections: A tool to dismantle the concept of the 'Other Audience'

Physics PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification in physics or a related discipline.

We are a research-intensive physics department, best known for our leading contribution to diverse fields of condensed matter physics. Building on our traditional strengths in fundamental physics we address the UK Grand Challenges. Our most significant contributions and innovations are in the areas of 2D and van der Waals materials, novel devices for energy harvesting, spintronics, high-frequency electronics, novel computing approaches and artificial intelligence.

Supporting you

You will be able to consult departmental academic staff regarding your specific research interests and assigned supervisors with expertise in the selected research area, at the start of your PhD. We have a vibrant international community of PhD researchers with whom you can interact regularly and we organise regular departmental seminars in topics of current interest which will help you to build an excellent network during your research. Furthermore, we offer bespoke training courses to support your research. Additionally, you can develop your skills further by supporting undergraduate teaching in the department.

How to apply

Projects which have funding attached are advertised on our website. For self-funded projects or those funded by third-party sponsors, you should give an indication of your general field of interest but are not advised to provide a detailed proposal.

Our areas of research

Novel Materials

Research in this area covers novel materials such as superconductors, graphene, and topological insulators, high temperature superconductivity, Weyl metals, magnetic and sprintronic materials and the engineering and design of quantum devices.

Quantum and Nano-engineering and Design

The interdisciplinary Quantum Systems Engineering Research Group brings together a unique team from diverse backgrounds including scientists, quantum technologists, engineers and end-users. Research in this area ranges from fundamental ideas in quantum mechanics and quantum behaviour in condensed matter to applications to quantum technology.

High Frequency Solid State Physics and Engineering

Research in this area is dedicated to the development of devices, such as sources, sensors and amplifiers, based on novel semi- and super-conducting materials for high-frequency (GHz/THz) applications.

Physics of Complexity

Research in this area covers econophysics, biophysics, Brownian motion, sociophysics and social networks, and physical principles of unconventional computing. The department has internationally leading research groups and infrastructure, supporting the research in all presented areas.

Our research groups are flexible and strongly engage in enhanced cross-communication and collaboration between the five departments of the school, namely, Physics, Chemistry, Mathematical Sciences, Computer Science and Mathematics Education. We have several interdisciplinary research centres involving staff and PhD students from all five science departments encouraging interdisciplinary research:

- Centre for the Science of Materials
- Centre for Geometry and Applications
- Centre for Analytical Science
- Interdisciplinary Centre for Mathematical Modelling
- Interdisciplinary Science Centre from Laboratory to Fabrication (Lab2Fab)

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Applied radiation detection
- Spectroscopic signatures of correlated quantum magnets
- Standing electron-vortex waves trapped between two reflective mirrors

Sport Business PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification.

The Institute for Sport Business has an interdisciplinary research-led team, incorporating internationally recognised researchers interested in the business of sport.

If you have a passion for the business of sport, a PhD with the Institute for Sport Business could be for you. The institute especially welcomes interest in sport consumer engagement, sport enterprises and social innovation in sport.

Our areas of research

Research by the Institute for Sport Business focuses on money, morality and meaning, and the implications of these factors on sport business. As such, the institute maintains an interest in the following research topics:

Sport consumer engagement

- fan and consumer experiences
- sport product and service evaluation
- athlete and player support and welfare

Sport enterprise performance

- leadership and organisational systems
- innovation and culture
- technologies, data, analytics and futures

Sport social innovation

- sport development and peace
- social impact, capital and legacy
- sport and (C)SR

Career prospects

As well as providing a route into academia, studying a PhD will give you the expertise and skills required to advance your career in a wide range of professions, vocations and businesses.

Sport, Exercise and Health Sciences PhDs

Entry requirements: A 2:1 honours degree or equivalent international qualification, or a master's degree.

With globally renowned staff collaborating with other academic institutions, centres and industry partners around the world, the School of Sport, Exercise and Health Sciences has been recognised for the quality of its research (commended in the most recent Research Assessment Exercise) and enjoys a high profile with employers and in the media.

Research is multidisciplinary, drawing on the natural and social sciences, to focus on issues of contemporary concern at international, national and local levels.

Supporting you

You will be assigned a primary and secondary supervisor who will provide personal support and academic advice, ensuring that you benefit from multidisciplinary research expertise. The Director of Doctoral Programmes will also be on hand to oversee your progress.

All doctoral researchers within the school can also take advantage of extra training opportunities and support designed to help you to develop professional skills, publish research and find out about potential career routes in academia and beyond.

In addition to access to world-leading facilities to support your research, you will have a desk, workstation, allowance for photocopying and inter-library loans, plus the opportunity to apply for conference travel grants.

How to apply

Funded projects (eg through research councils, university funding or industry sponsorship) are advertised via our website and do not require a research proposal.

For self-funded projects or those funded by third-party sponsors, you should submit a research proposal of a maximum of 1,000 words. This should include the aims of your study, a brief literature review, an outline of your proposed research methods and your preferred supervisor for the project.

We strongly recommend that you contact us for preliminary discussions regarding topics, availability and funding before submitting an application.

Our areas of research

The school's research activity is organised within three themes.

Sport Performance

Our research focuses on the enhancement of athletes' performance in competitive sport, by investigating the optimal preparation for, delivery of, and recovery from athletic activities.

Drawing on multiple scientific disciplines and methods, we seek to better understand the factors associated with performance enhancement and use this knowledge to support athletes, teams and coaches.

Lifestyle for Health and Wellbeing

Our aim is to provide evidence-based knowledge to improve human health and wellbeing by considering the social, behavioural, nutritional and biological determinants and consequences of human lifestyles.

Our world-leading research provides evidence-based knowledge that facilitates improved physical and mental health and wellbeing, lowers the risk of communicable and non-communicable disease, and aids the effective management of pre-existing conditions.

Sport, Business and Society

Our research explores how individuals, communities and organisations engage with and facilitate sport and exercise opportunities. Our aim is to develop critical and transformative insight that can improve lives.

We critically assess the factors, structures and processes that motivate, enable and constrain people's engagement with sport as part of their daily lives, analysing casual and informal physical activity as well as formal, organised and elite sport.

For more information about our research opportunities, please visit our website: lboro.ac.uk/ssehs/research

Examples of PhD project titles

Our students work on extensive research topics. Examples of projects include:

- Nutritional interventions to enhance performance and recovery in track and field athletes
- The effect of a sedentary lifestyle on health
- Fast bowling technique and injury potential in cricket
- Development of a participant-centred and evidence-based intervention to address eating psychopathology in athletes

Our doctoral community

See what some of our doctoral researchers from our Loughborough and London campuses have to say about their experiences of studying with us.

"I am proud of the numerous opportunities that Loughborough has offered me from tuition fee scholarships and travel grants for international exchange programmes, through to the extracurricular activities on offer – there are a wide range of opportunities to get involved with and I am able to find my own kind of fun and social space."

Chidinma
PhD Geography and Environment

"Loughborough University London is an immense source of opportunities. I have been provided with the tools, skills and professional networks in order to pursue a successful career in academia and industry."

Federico
PhD Design Innovation

"At Loughborough University London, I really loved being based on the Olympic Park and taking part in everything. I made the most out of my experience and I established several collaborations at Here East, too. I am so grateful for this experience and it was always so amazing being based around such innovative practices, people and inspirational projects."

Adaku Jennifer
PhD Innovation and Entrepreneurship

"The thing I enjoy the most about studying a PhD here is the community – we meet up every week in our research groups within the department, we regularly have social events together and there's always something happening to bring postgraduate researchers from across the University together. There's never any feeling of isolation here."

Jack
PhD Communication and Media

- lboro.ac.uk/pg-stories
- lborolondon.ac.uk/doctoral-researchers

DEVELOPMENT OPPORTUNITIES

Development opportunities

Doctoral researchers at Loughborough are expected to engage in wider developmental activities beyond the focused scope of their specific research topic. The ultimate goal of this is to create well-rounded, resilient and employable researchers.

lboro.ac.uk/dc-training

Developmental opportunities include:

- formal training workshops and courses delivered through the Doctoral College by Professional Services staff
- University-wide events, such as the annual Research Conference and the Summer Showcase, where researchers may give a short presentation or display a poster about their research
- school or department events, such as a seminar series or journal club
- engagement with international research leaders through the **Institute of Advanced Studies** events and bespoke workshops for doctoral researchers
- placement opportunities with external partners.

All development opportunities are mapped directly onto the Researcher Development Framework (RDF) developed by Vitae (the UK's national organisation for researcher development).

Our Careers Network and Future Space also provide support to doctoral researchers. Whether your aim is to work in academia or industry, our careers consultants can help you to identify your options and provide practical advice and guidance on how best to market your knowledge, skills and abilities.

There are also less formal opportunities to meet and network with other researchers. For example, Café Academique sessions give doctoral researchers a chance to share and discuss their research in a relaxed setting, whilst the PhD Social and Support Network runs a weekly lunchtime drop-in event that is open to all doctoral researchers, along with other social activities.

Accommodation

Whether you study in Loughborough or London, on or off campus, we are here to help you find a safe, comfortable and affordable home for the duration of your studies.

Living in Loughborough

We have three self-catered halls of residence available to our postgraduate students, located on campus or close by. Rooms are let on a 50-week basis and are competitively priced.

- John Phillips is situated in the student village on campus and is exclusively for postgraduates.
- Harry French accommodates a mix of students, with three houses reserved for postgraduates (one of which offers two-bedroom flats for small families).
- Falkner Eggington is our largest self-catered hall on campus with a unique mix of ages and cultures.

Short-term lets

We offer several options for short stay accommodation on campus, ranging from a room in our dedicated visitor accommodation in University Lodge to visitor flats, houses and rooms in our halls of residence.

Privately owned accommodation

Our Student Accommodation Centre advertises a wide selection of privately owned accommodation in Loughborough. Suitable for single occupants, couples and families, these properties have been inspected and approved by us.
loughboroughstudentpad.co.uk

Living in London

We work closely with a number of experienced, reputable organisations to provide you with high-quality accommodation, including shared housing and self-contained apartments and houses. Our recommended providers can source housing for single students, couples and students with families.

Unite Stratford ONE

Located on Queen Elizabeth Olympic Park, Unite Stratford ONE is just a 15-minute walk to our London campus or a free shuttle bus service is available. It offers a range of single en-suite rooms and larger studio apartments, which are suitable for couples.

Student.com

Designed to help you find your home away from home, student.com offers a wide range of rooms that are built and managed specifically for students. They provide a variety of accommodation types and contract lengths to enable you to find the right home. The website has a global team of booking experts who speak 12 languages and provide 24-hour online support alongside a price match promise.

Student Accommodation Centre
+44 (0)1509 274488
sac@lboro.ac.uk

lboro.ac.uk/pg-accommodation

Fees and funding

Studying a doctorate at Loughborough University is a significant but incredibly rewarding investment in your future.

University tuition fees

Tuition fees* cover the cost of your registration, teaching, assessments, access to facilities and support services, and can be paid in full or in instalments. Additional costs may apply for some PhD programmes. Please check individual project details to find the tuition fee for your entry date: lboro.ac.uk/phd-opportunities

University studentships

Our studentships typically cover the full cost of fees and may also include a tax-free stipend for living costs. In some cases, additional funding will be provided for research support expenses.

Loughborough Alumni Bursary

We are proud to offer 20% towards the full cost of tuition fees for self-funding postgraduate research students who obtained their previous degree from Loughborough University or Loughborough University London. Students must not be in receipt of any other award.

Other sources of funding

A large number of independent organisations, charities and trusts support postgraduate research in a variety of areas. UK Research Councils offer a number of studentships and grants for doctoral study, which often include the cost of fees and a generous stipend. These studentships are advertised on our website.

International funding

International students may be eligible for funding from grant awarding bodies in their own country, such as the Ministry or Department of Education. The British Council also manage a small number of international grants that may be available to you.

UK Government doctoral loans

The UK Government has introduced new doctoral loans of up to £27,892 for PhDs and equivalent postgraduate research programmes. The loan is suitable for full- and part-time postgraduate research students undertaking programmes lasting up to eight years. For eligibility information, please see our website.

FIND OUT MORE

START DATES

There are four available start dates for postgraduate research courses during the academic year:

1 January, 1 April, 1 July, 1 October.

FIND OUT MORE

A TOP 10
UK UNIVERSITY

General enquiries

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E: pgresearch@lboro.ac.uk

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