



THE UNIVERSITY
of EDINBURGH



Leading Major Programmes

MSc | PgCert | PgDip

Programme overview

Duration

Two years; part-time

Location

Taught courses over the first four semesters are held in Edinburgh, UK, with self-learning activities and assessment conducted from home.

MSc

12 courses delivered over 10 blocks.

Each course involves preparatory work, three days on campus, and coursework-based assessment.

Year 1	
Semester 1	
Block 1	Oversight, Assurance and Stakeholder Management
Block 2	Procurement for Programme Delivery
Block 3	Data Science for Decision Makers
Semester 2	
Block 4	Programme Design, Governance and Management for Complexity + Systems Thinking, Systems Practice (part 1)
Block 5	Understanding, Sustaining and Enhancing Resilience + Systems Thinking, Systems Practice (part 2)
Block 6	Project Controls, Data Visualisation and Reporting
Semester 3	
Block 7	Negotiation
Year 2	
Semester 1	
Block 8	Managing Strategic Risk in Major Projects + Philosophy and Engineering (part 1)
Block 9	Research Methods in Programme Management + Philosophy and Engineering (part 2)
Block 10	Design and Performance of Delivery Enterprise
Semester 2 & 3	
Leading Major Programmes Dissertation	

PgDip

This requires passing the twelve courses delivered during the first four semesters.

PgCert

This requires passing only six courses (of your choice) out of the twelve courses delivered during the first four semesters.

**We will review the exact portfolio of courses each year, taking account of student feedback and the changing environment. If you are interested in a particular topic, please confirm nearer the start of the programme whether the relevant course will be running.*

Why study the MSc in Leading Major Programmes?

A world-class, distinctive degree

The MSc in Leading Major Programmes will develop leaders who are equipped to deliver large-scale and complex projects and programmes fit for the 21st century, across sectors. The programme is delivered by a world-renowned University ranked 20th globally (2020 QS World University Rankings), with an interdisciplinary teaching team of leading academics from four Schools and practising programme managers from industry.

The MSc breaks new ground in approaches to leading major programmes by integrating core topics on programme management with emerging and increasingly relevant subjects such as resilience, data science for decision making, and philosophy. Students of the programme will gain the theoretical and practical tools to understand the complexities and interdependencies of large programmes, and to think and act innovatively for effective programme delivery.

A convenient programme structure

Our programme is designed specifically for working professionals seeking progression to more senior positions of responsibility and leadership in the delivery of major programmes. To support these aspirations, our degree is delivered in short, intensive blocks of on-campus classes that flex around existing full-time careers.

The 12 separate taught courses within the degree programme are delivered over ten blocks lasting three to five days on campus, with approximately one block per month. There are no formal examinations and each of the 12 courses will be assessed by coursework, due a few weeks after the classroom blocks finish. The last eight months of the degree programme are dedicated to a research project that will enable you to mobilise your newly acquired knowledge to address a problem relevant to your professional practice.

Postgraduate Certificate and Diploma qualifications are also offered as alternative degree enrolments, with the possibility to progress to the full MSc degree. These alternative entry routes aim to accommodate shorter and/or slower progressions through the degree.

Business critical topics

A key feature of the MSc in Leading Major Programmes at Edinburgh is the innovative and stimulating set of courses it offers. The course set covers the essentials of programme management while providing deep insights into the political and relationship management capabilities essential for leaders and leadership teams navigating risks in a major programme context. Additionally, the programme covers topics of particular contemporary relevance, providing knowledge and techniques in:

- **Data science and AI** to enable you to develop effective digital strategies;
- **Negotiation** equipping you to craft better deals, and manage teams and other project relationships more efficiently;
- **Resilience**, to develop personal, collective and project resilience for coping with uncertainty and change at all these levels; and
- **Philosophy** to realise the value of the right types of thinking and thought-ecosystems to successful leadership.

A central place to study

The degree is delivered at the University's campus in the heart of Edinburgh, making it convenient not only for those working or living in the city but also for those commuting from surrounding areas and other major cities across the UK and Europe.

Edinburgh's two major railway stations, Waverley and Haymarket, operate regular services to other parts of Scotland and the UK, and a 15-minute walk from Waverley will bring you to central campus.

Edinburgh Airport – the third biggest city airport in the UK in terms of passenger numbers – is located 8km to the west of Edinburgh, with good bus, tram and taxi links. Depending on the time of day, the average journey from airport to town centre can take around 25 minutes.

How you and your employer will benefit

The MSc in Leading Major Programmes is designed to give you all the tools you need to become a future business leader, while bringing new knowledge, networks and skills directly into your workplace.

Industry-focused curriculum

The programme will widen your expertise, by equipping you with the knowledge and skills required to manage the ever-more complex and challenging major programmes of today and tomorrow. The learning developed during the programme can be put into practice immediately in your day-to-day role, helping inspire innovation and change more widely in your organisation. The part-time model of the programme will accelerate this process of knowledge transfer with colleagues.

Customisable projects

The programme enables you to complete a number of project assignments tailor-made to your organisation's interests and needs. In particular, the dissertation project is designed to be undertaken in direct partnership with your employer, who can help define and develop a research question, and support you to gather the relevant data. Influenced by the latest theory and practice, the outcomes of this project will become valuable business information for your employer to reflect and act upon.

Developing your network

By studying with first-rate professionals representing various stakeholders from a range of sectors, both nationally and internationally, you will expand your own and your employer's network of contacts and expertise. At the same time, you will be well-placed to promote your organisation's expertise and outlook within that new network.

A long-term investment

Participation in this programme is a sustainable investment of mutual benefit to you and your employer. It will help you to build a rewarding and meaningful career with clear long-term progression, while enabling your employer to develop in-house talent, skills and expertise aligned with their goals and objectives.





Programme structure

This programme allows for three levels of study:

Postgraduate Certificate (PgCert)

Postgraduate Diploma (PgDip)

Master of Science (MSc)

The following 12 courses and dissertation project make up the MSc in Leading Major Programmes.

Oversight, Assurance and Managing Stakeholders

Successful programmes require robust systems for accountability, peer review and stakeholder management. Major programmes account for significant expenditure of public or corporate funds. Programme leaders are accountable for the prudent use of funds directed to the outcomes and benefits identified for the programme, as approved through due process and governance. Drawing on case studies, this course provides future leaders with the skills to understand the benefits of independent peer review, manage the relationship with parties responsible for oversight and assurance of the programme, and understand their role in the process of external assurance. In addition, the course will investigate the role of stakeholders with various degrees of interest and influence in programme success and how best to manage those relationships.

Data Science for Decision Makers

Programme scopes in all sectors increasingly include digital components, while programme delivery additionally relies on ever-growing quantities of heterogeneous data. The concept of 'Digital Twin' is increasingly employed in both cases. This course introduces key concepts and ideas from data science and data management, exploring how these relate to decision-making processes in organisations. It is aimed at those from a less technical background with management responsibilities, who will benefit from a grounding in data and digital twinning.

Procurement for Programme Delivery

Contracts and the transaction processes to award them are fundamental in setting the conditions for successful programmes. Drawing on numerous recent case studies, the course will provide an overview of different forms of contracts and approaches to transaction (including relational contracting), and is structured around the UK Infrastructure and Projects Authority (IPA)'s '6 Pillars of Procurement'.

Programme Design, Governance and Managing for Complexity

The course provides a critical understanding of current governance systems and practices including board composition, to equip managers with practical tools to govern ambiguity, complexity and the management of 'unknown unknowns' in decision-making processes. The course draws on organisational theory, science, technology, and rhetoric, blending them in ways that will empower you to manage governance challenges across formal and informal settings.

Project Controls, Data Visualisation and Reporting

This course equips participants with a critical understanding of the functioning and use of financial data and metrics to manage complexity and uncertainty in major programmes across all application sectors. It teaches novel principles of design management control systems, and data visualizations such as dashboards, that allow managers to govern organizations and major programmes that present significant levels of complexity and uncertainty.

The PG Certificate requires that you pass six 10-credit courses that are all compulsory. The PG Diploma requires that you pass an additional six 10-credit courses that are all compulsory.

The MSc part of the programme is dedicated to the research project to be written up as a dissertation.

Understanding, Sustaining and Enhancing Resilience (USER)

This course begins with a broad view of resilience, moving from the intrapersonal dimension of 'resilient individuals' up a sequence of more and more complex settings around interpersonal resilience. These include: teams and organisations, supply chains and industrial networks, complex systems and major infrastructure (e.g. major bridges, and high-speed rail projects), communities, cities and rural spaces, and economies, entire nations and supranational organizations (e.g. the European Union).

Enhancing resilience is a complex, poorly understood problem, the understanding of which is unlikely to take place solely on the basis of (hard) data available at hand. This course proposes a tested method to study and improve resilience. The method is agnostic to the application sector, the type of industry or problem considered, and promotes the integration of qualitative and quantitative analysis around resilience-related problem situations.

Systems Thinking, Systems Practice

Large programmes are nearly always complex systems which may include people, processes, information, organisations and services, as well as software, hardware and complex products. A systems approach is vital in helping major programme leaders to understand and effectively control these complex aspects, optimising their interactions to ensure successful delivery. This course builds on Systems Thinking theory to show how the techniques of Systems Engineering can be used within large programmes in any application sector, where the limitations of traditional methods become apparent and new data-driven approaches are needed.



Negotiation

Effective negotiation is one of the most valuable skills needed for success in leading major programmes in any sector. Expertise in negotiation leads to the crafting of better deals, more efficient management of teams and projects, and successful conduct of client and employee relations. This course offers useful and effective theoretical insights into the negotiation process. It also provides practical tools that can be used in a range of situations such as: negotiating commercial contracts; corporate take-overs; union-management agreements; setting regulatory conditions; determining the location of an environmentally hazardous facility; or resolving commercial disputes with third party intervention.

Managing Strategic Risk in Major Projects

A deep dive into the sources of strategic risk in the delivery of major projects in any sector and how to overcome, and even profit from, such risks. You will be equipped with an understanding of how to map and manage strategic risks in the designing, building, and running of major projects.

Drawing on behavioural psychology and theories of risk management, this course reviews the challenges of risk facing major projects and examines how to avoid common pitfalls and potentially even turn risks to one's advantage. The course will introduce a variety of analytical tools and will conclude with a primer on radical new technologies being considered to harness risk.

Philosophy and Engineering

This course starts with the concept that successful programmes in any domain require capable and effective leaders. What we think hugely influences what we do, and in turn, how we think influences what we think. These concepts of what and how we think are central to the subject of philosophy.

The course then explores the relevance of this to major programme leaders, establishing that these leaders must 'think well' if they are to act well in their leadership; and they should also create a climate of thinking in and around the programme that supports great outcomes. A deeper understanding of thought and thinking is beneficial to the goal of realising major programmes and how they are successfully engineered.

Design and Performance of Delivery Enterprise

Successful programmes require effective delivery organisations and leadership. Choosing the right model is one of the most important decisions to be made by leadership and one of the most influential on successful outcomes. Drawing on case studies, the course provides future leaders with the skills to understand the knowledge required to make this key decision and the factors influencing the decision.

Once in place, enterprises need to mature and become more effective. Leaders need to have the ability to recognise the factors that allow organisations to develop from their initiation phase into fully mature delivery enterprises and the means of assessing capability progressively. This course provides the tools to decide if and when organisational change is required.

Research Methods in Programme Management

This course will prepare you for the final dissertation project of the MSc by considering the process of research and offering a detailed overview of the research methods appropriate to the topics you are likely to consider. The course also considers practical aspects of preparing and writing the dissertation itself. You will be able to apply the knowledge and skills gained in this course during the development of your dissertation research proposal.

Leading Major Programmes Dissertation

The final two semesters of the part-time programme are dedicated to the delivery of the final project. This is worth 60 credits and results in a final project report equivalent in complexity and demands to a conventional master's thesis. The project topic will relate to your past, present or anticipated future experiences within your field of operation and is a capstone project bringing together the range of knowledge and skills acquired during the course.

The course leadership

Leading academics from four academic Schools of the University of Edinburgh join forces with practising experts at the forefront of industry to deliver the MSc in Leading Major Programmes.



Professor Gordon Masterton
School of Engineering,
University of Edinburgh

Gordon is the University's Chair of Future Infrastructure, bringing more than 40 years of industry experience and leadership of major infrastructure design, construction and commissioning to the programme. Until 2015, he was Vice-President of Jacobs Engineering, and is a past president of the Institution of Civil Engineers (ICE), former chairman of the Construction Industry Council, and former Vice Chairman of the Royal Commission on the Ancient and Historical Monuments of Scotland. Gordon was the UK Government's project representative on the £15bn Crossrail programme in London from 2009 to 2013 and is Chairman of the Independent Assurance Panel for the HS2 high-speed rail link.



Dr Simon Smith
School of Engineering,
University of Edinburgh

A Fellow of the Institution of Civil Engineers with nearly 10 years of infrastructure construction experience and over 20 years in academia, Simon is equipped to deliver a degree programme that meets the needs of industry. His research into construction processes, project management cost, safety risk and sustainable built environments enables relevant contextualisation of programme delivery and needs.



Dr Frédéric Bosché
School of Engineering,
University of Edinburgh

Frédéric is a Senior Lecturer in Infrastructure Programme Management with expertise in project management as well as computer science – in particular computer visions and visualisation – applied to project and asset monitoring in the domain of the built environment. He is the current President of the International Association for Automation and Robotics in Construction (IAARC).



Professor Colin Cunningham
School of Engineering,
University of Edinburgh

Colin is Royal Academy of Engineering Visiting Professor in Systems Engineering. He recently retired from the UK Astronomy Technology Centre, where he carried out a range of roles in project and programme management and systems engineering for world-leading ground and space-based telescopes and instrumentation, including ESO's Extremely Large Telescope.



Martin Rowark
Gardiner and Theobald LLP

A Fellow of both the Institution of Civil Engineers and of the Royal Institution of Chartered Surveyors, Martin specialises in complex acquisition and commercial strategies within the Infrastructure sector. He is a Partner of Gardiner and Theobald LLP, and has previously worked for a number of large infrastructure owners and delivery teams (including as Director of Commercial at TfL and Procurement Director Crossrail). As an example, Martin successfully contributed to the London 2012 Olympics, where he led the Procurement Strategy development and the acquisition of Venues for the Olympic Delivery Authority (ODA).



Dr Atif Ansar
University of Oxford, Said
Business School

A Fellow of Keble College, Atif has worked at the University of Oxford since 2006. Atif's research focuses on major project management. In collaboration with various colleagues, he is pioneering research on technology, modularity, and artificial intelligence in major infrastructure and city projects. He has also consulted for the World Bank, UK Government, governments in Asia and Africa, and private sector clients.



Professor Brian Main

University of Edinburgh -
Business School

Former Head of Economics at St Andrews and Edinburgh Universities respectively, Brian Main joined the University of Edinburgh Business School in 2001. In his earlier career, he worked as a physicist for the UKAEA and, after an MBA at Berkeley, as a manager with the Eli Lilly Corp. Brian has published widely in the area of the New Economics of Personnel, and his research on topics such as negotiation and top executive pay has been supported by the Economic and Social Research Council (ESRC).



Maurizio Tomasella

University of Edinburgh,
Business School

Maurizio is an Operational Researcher/Management Scientist, currently based at our Business School, where he is co-director of the Edinburgh Strategic Resilience Initiative, a cross-disciplinary network of resilience academics. He joined us from the Cambridge University Engineering Department, where he was affiliated with the Distributed Information and Automation Lab and at the AutoID Lab at the Institute for Manufacturing. Prior to that, Maurizio was part of the Manufacturing Technology and Systems Lab at Politecnico di Milano, Italy.

His research looks extensively at the resilience of air transport systems and particularly airports. In the 'Operational Freedoms' programme, he studied operational resilience at London Heathrow and impact on noise emissions to the surrounding communities, which has formed a basis for the work of the subsequent Davies Commission which ultimately recommended the construction of the new runway.



Dr Nick Treanor

School of Philosophy,
Psychology and Language
Sciences, University of
Edinburgh

Nick Treanor is Reader in Philosophy and Head of the Department of Philosophy. Before coming to Edinburgh in 2012, he was Newton Trust Lecturer in Philosophy at the University of Cambridge and a Fellow of Churchill College. He works in epistemology, the philosophy of mind and language, and metaphysics, and is particularly interested in the questions of how knowledge grows, what an amount of knowledge is, and about what it is for one amount of knowledge to be more or less than another.



Bill Hewlett

Costain Ltd

Bill Hewlett is a civil engineer with around 40 years' experience of major infrastructure design and construction. While Technical Director at Costain, he served in many roles across the sector including Vice President of the Institution of Civil Engineers, Founder and Chair of the Temporary Works Forum, and is currently board member of the Engineering Council and Chair of the Standing Committee on Structural Safety. He also holds a visiting professorship at Cardiff University Business School. Bill's interest in the philosophy of engineering is inspired by the intersection of science, intuition, history, finance, certainty and uncertainty, and complex social and natural phenomena which occurs during major programmes of work.



Dr Adam Carter

Edinburgh Parallel
Computing Centre (EPCC),
University of Edinburgh

Adam has worked at EPCC since 2003 on a wide range of projects, from commercial data mining to high-performance computing (HPC) simulations of fusion reactors. He is also closely involved with EPCC's MSc programmes in High Performance Computing and Data Science for more than a decade. Recently, Adam's work has focused on data science, on projects in data infrastructures, data management, data preservation and data-intensive computing. He is currently course organiser for the MSc courses Fundamentals of Data Management, and Practical Introduction to Data Science, and Programme Director for an MSc in Data Science, Technology and Innovation.



Philip White

Costain Ltd

Philip is Group IT Director at Costain Ltd. He has over 25 years' experience of technology leadership, for corporate IT and client-delivery projects. He supports Costain's market areas of UK infrastructure and natural resources. With a passion for improving the UK's civil infrastructure, Philip builds bridges across the experts working in the engineering and technology domains. Recent programme successes include Costain's move to cloud-based IT, supporting a series of major capital projects in the rail and highways sectors and leading 'digital twin' initiatives for asset maintenance across water sector clients.

The University of Edinburgh

Granted its Royal Charter in 1583, the University of Edinburgh is one of the oldest universities in the United Kingdom.

More than 200 years ago, its central role in the Scottish Enlightenment helped create a bright new reason-based approach to the human condition. Today that legacy inspires a modern, forward-looking institution, world-class academics and more than 40,000 students from across the globe who have chosen to study at Edinburgh.

A world class choice

A centre of excellence for teaching, research and innovation

Whether pursuing a degree, a Masters, MBA or PhD, our students are exposed to challenging ideas and inspired thinking. Ranked 20th in the 2020 QS World University Rankings, Edinburgh is home to some of the most influential academics in their fields. Internationally recognised for first-rate research, development and innovation, the University belongs to the Russell Group of leading UK research-intensive universities. Alongside a commitment to robust academic research is a dedication to enterprise and entrepreneurship, as evidenced by the University's numerous successful spin-outs and dedicated commercialisation service, Edinburgh Innovations.

An outward-facing approach

A global outlook demands established global connections. Across teaching and research activities, we work with partners including universities in the USA, Canada, China, Australia and India in fields as diverse as e-science, life and medical sciences, engineering, and arts and culture.

Cutting-edge learning facilities

Throughout our campuses, well-equipped, contemporary environments are purpose-built for studying, learning, networking and relaxing. Newer facilities like our award-winning Edinburgh Centre for Carbon Innovation (ECCI) sees the University collaborating with partners across government, business and communities to help drive policy, innovation and solutions.

Edinburgh Futures Institute

This degree programme is affiliated with the University of Edinburgh's Futures Institute, whose aim is to bring together people from different backgrounds and different disciplines, in order to tackle the big challenges we face locally and globally.

EFI's approach combines multi-disciplinarity with co-production. Working with industry, governments and communities to build a challenge-led and data-rich portfolio of activities and learning that has demonstrable ethical, social, economic and environmental impacts.

19

There are 19 Nobel Prize winners who are alumni of the University or have been members of academic staff



83%

The majority of our research - 83% - is considered world leading or internationally excellent



403m £

In 2017/18 we won £403 million in competitive research grants.



How to apply

Entry options

This programme allows for three levels of study:

Postgraduate Certificate (PgCert)
Postgraduate Diploma (PgDip)
Master of Science (MSc)

The PG Certificate requires that you pass six 10-credit courses that are all compulsory. The PG Diploma requires that you pass an additional six 10-credit courses that are all compulsory. The MSc part of the programme is dedicated to the research project to be written up as a dissertation.

Fees and costs

If you receive an offer of admission, either unconditional or conditional, you will be asked to pay a tuition fee deposit of £1,500 to secure your place on the programme.

Fees must be paid in full by each postgraduate student at the beginning of each academic session in September.

More information about fees and possible additional costs can be found on the degree webpages: www.edin.ac/msc-imp

In addition to tuition fees, you will need to cover your own expenses for:

- Travel to and from the University
- Accommodation during your studies
- Any travel potentially involved in completing courses
- Dissertation Project expenses

You do not need to provide evidence of ability to cover your living expenses when applying to the programme, however you should be aware that participation in the programme is a major commitment in terms of both time and money.

Scholarships and funding

We offer a number of scholarships to successful applicants on our MSc programmes. Strict eligibility criteria apply and full details are available through the degree webpages: www.edin.ac/msc-imp

Please note you will require an offer for the programme before you can apply for a scholarship, as these are two separate processes.

The University offers additional scholarship, a full list of which can be found the website:

www.ed.ac.uk/student-funding/search-scholarships



THE UNIVERSITY of EDINBURGH
School of Engineering



THE UNIVERSITY of EDINBURGH
Edinburgh Futures Institute

To get involved and be part of this life-changing masters programme, contact:

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edin.ac/msc-lmp



#msc-lmp

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