

## Programme Specification

Programme Summary Information			
<b>1</b>	<b>Programme Title</b>		MSc Engineering Management with AI
<b>2</b>	<b>University of Sunderland Course Code</b>		<b>UCAS Code</b>
<b>3</b>	<b>Awarding Institution</b>		University of Sunderland
<b>4</b>	<b>Teaching Institution(s)</b> (if different from point 3)		University of Sunderland in London
<b>5</b>	<b>Professional Statutory or Regulatory Body (PSRB)</b> (if applicable)		N/A
<b>6</b>	<b>For Apprenticeships:</b>		
	<b>Name of Apprenticeship Standard</b>		N/A
	<b>Apprenticeship Standard Number</b>		N/A
	<b>IfATE LARS Number</b>		N/A

<b>7</b>	<b>Programme Description</b>
	<p><b>Overview</b> The MSc Engineering Management with AI programme is designed for engineers and technical professionals aspiring to move into management roles where they can lead multidisciplinary teams and projects. It uniquely integrates engineering leadership, digital transformation and sustainability, preparing graduates to navigate the complex challenges of modern engineering industries.</p> <p>Students will develop advanced knowledge and understanding of engineering management principles in the context of digital transformation and sustainable development. The programme is designed to prepare graduates not only for current roles but for emerging leadership positions in AI-driven operations, sustainable infrastructure and digitally integrated engineering ecosystems. The programme directly supports the university's commitment to the UN Sustainable Development Goals (SDGs) by embedding sustainability, circular economy principles and responsible engineering practices across modules. It also prepares graduates to tackle climate change, resource scarcity and ESG challenges aligned with the university's sustainability agenda. Furthermore, the programme aligns with the university's goal of offering digitally forward and future-focused curricula. The inclusion of live consultancy projects, simulations and exposure to industry-standard tools (Power BI, Lean Six Sigma and others) supports the university's focus on enhancing student employability and applied learning. Also, it promotes the development of leadership, entrepreneurial and project management skills valued across multiple engineering sectors. Last but not least, the programme supports the institution's commitment to inclusivity and preparing graduates for diverse and global workplaces.</p>

The programme addresses employer requirements in various ways. For instance, post-pandemic and geopolitical supply chain disruptions have heightened employer focus on risk assessment and resilience. This programme addresses those needs through dedicated modules on risk and operational resilience. The live consultancy capstone project responds to employer demands for engineers who can engage with clients, solve real-world problems and communicate recommendations to non-technical stakeholders. The programme also emphasises professional communication, negotiation, team leadership and stakeholder engagement; core soft skills repeatedly highlighted by employer feedback. Employers value engineers who can effectively manage projects, finances, and teams. This programme develops those skills alongside technical knowledge.

The programme also addresses student feedback. For example, Students often ask for practical, hands-on experiences. This programme offers a live consultancy project, simulations, and industry case studies, providing students with tangible experiences that add value to their CV. Student feedback also shows growing demand for more data analytics and digital tools. The programme integrates AI, data visualisation and decision-making tools to meet this need. Besides, increasing numbers of students want to contribute to sustainable and socially responsible engineering. This programme embeds sustainable systems design and ethical leadership throughout. Furthermore, both current and prospective Students have expressed a preference for more varied assessments beyond examinations. The programme includes reports, simulations, presentations and reflective portfolios to meet the diverse learning styles of students.

#### **What's covered in the course?**

The MSc Engineering Management with AI programme provides a comprehensive, integrated education in the management of engineering organisations and systems within an increasingly digital, data-driven and sustainability-focused global environment. It is designed to equip engineers and technical professionals with the strategic, analytical, financial and leadership capabilities required to operate effectively at the interface between technology and management.

The programme covers advanced principles of engineering leadership and strategic management, enabling students to understand how organisations formulate strategy, build competitive advantage and foster innovation in complex and rapidly changing contexts. Students explore contemporary leadership theories, organisational behaviour, change management and innovation processes, with particular attention to how engineering leaders create cultures that encourage creativity, ethical conduct and continuous improvement. Entrepreneurship, intrapreneurship and the commercialisation of technology are also examined, providing insight into how engineering ideas are transformed into viable products, services and systems.

A substantial focus is placed on operations and supply chain management, recognising the central role of efficient and resilient operations in engineering-intensive industries. Students develop a deep understanding of process design, capacity planning, quality management, lean and Six Sigma approaches, inventory management and logistics network design. These topics are examined through both conceptual and quantitative lenses, allowing students to analyse and model operational performance. Artificial intelligence and advanced analytics are introduced as tools for forecasting, optimisation and decision support, helping students understand how digital technologies are reshaping supply chain planning and execution.

	<p>Financial and commercial management forms another core component of the programme. Students learn to interpret and analyse financial statements, apply costing and budgeting techniques and conduct investment appraisal for engineering projects. The programme also addresses procurement, contract management, pricing and negotiation, ensuring that graduates understand the commercial realities of engineering decision-making. Emphasis is placed on evaluating financial and commercial risk, supporting students in making sound, evidence-based recommendations that balance technical, financial and strategic considerations.</p> <p>Digital transformation and data-driven decision-making are embedded across the programme, with dedicated coverage of how organisations leverage data, AI and emerging technologies to enhance performance and competitiveness. Students explore data management, analytics, machine learning fundamentals, business intelligence tools and digital platforms commonly used in engineering contexts. They learn to translate data into meaningful insights through visualisation and analytical models and to critically evaluate digital transformation initiatives in terms of organisational impact, implementation challenges and ethical implications. The programme also considers issues such as cybersecurity, data privacy and governance, highlighting the responsibilities associated with the use of digital technologies.</p> <p>Sustainability and responsible engineering are central themes throughout the programme. Students examine sustainable development principles, systems thinking, life cycle assessment, circular economy models and low-carbon technologies. They learn how to design and manage engineering systems that balance environmental, social and economic objectives and how to measure and report sustainability performance using ESG frameworks. Risk management is integrated with sustainability, enabling students to identify, assess and mitigate a wide range of technical, operational, environmental and strategic risks. Artificial intelligence is explored as a tool for predictive risk analysis, resilience planning and scenario modelling.</p> <p>The programme culminates in a substantial engineering consultancy and capstone project. In this module, students undertake an independent, practice-oriented project that addresses a real-world engineering management problem, often in collaboration with an external organisation. Students apply appropriate research or consultancy methodologies, collect and analyse data and develop actionable recommendations. This experience allows students to integrate knowledge and skills developed across the programme while demonstrating professional communication, critical reflection and project management capability.</p> <p>Across all modules, the programme develops advanced interpersonal and professional skills, including communication, teamwork, negotiation, stakeholder engagement and leadership in multidisciplinary and multicultural environments. Graduates of the programme will possess a balanced combination of technical understanding, managerial competence and digital literacy, enabling them to lead engineering projects and organisations effectively in AI-enabled, sustainable and globally connected industries.</p> <p><b>Where will I study?</b> Students who enrolled on the MSc Engineering Management with AI programme will be studying at the University of Sunderland in London. Teaching will be face-to-face.</p> <p><b>Does the programme have an associated IFY? No</b></p>
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<b>8</b>	<b>Programme Awards</b>		
<b>8a</b>	<b>Name of Final Award</b>	<b>Level</b>	<b>Credits Awarded</b>
	Master of Science in Engineering Management with AI	7	180
<b>8b</b>	<b>Exit Awards and Credit Awarded</b>		
	Postgraduate Certificate in Engineering Management with AI	7	60
	Postgraduate Diploma in Engineering Management with AI	7	120

<b>9</b>	<b>Programme Specific Regulations</b>
	Yes/No (if yes, part B to be attached as an appendix once the Programme Specific Regulations are approved)

<b>10a</b>		
<b>Mode(s) of Study</b>	<b>Location/Campus</b>	<b>Duration of Study</b>
Full time	Sunderland/London	1 year
Part time	Sunderland/London	2 years

<b>10b</b>	
Is this programme delivered at a <a href="#">Transnational (TNE) partner</a> ?	No
Is this programme delivered at <a href="#">UK Partner Institutions</a> ?	No

<b>11</b>	<b>Entry Requirements</b>
	<p>The admission requirements for this programme as stated on the course page of the University of Sunderland website at <a href="https://www.sunderland.ac.uk/">https://www.sunderland.ac.uk/</a>, or found by searching for the course entry profile located on the <a href="#">UCAS website</a> are correct. YES</p> <p>This programme is suitable for students to enter with advanced standing (e.g. APL) YES</p> <p>Where applicable use the space below to detail any specific arrangements – e.g. APL only permitted to a specific level <a href="#">Accreditation of Prior Learning (APL)</a></p>

<b>12</b>	<b>Programme Learning Outcomes</b>
	By the end of <b>Certificate Stage</b> of the programme successful students will be able to do the following:
<b>1</b>	Critically evaluate advanced theories, principles, and practices of engineering management, including leadership, operations, digital transformation and sustainability within global industrial contexts.
<b>2</b>	Demonstrate a comprehensive understanding of sustainability, ethical leadership and corporate social responsibility to develop and manage engineering solutions that address contemporary global challenges.
<b>3</b>	Analyse and model supply chain performance using quantitative methods and AI-driven decision-support systems.
	By the end of <b>Diploma Stage</b> of the programme successful students will be able to do the following:
<b>4</b>	Critically appraise financial, commercial and procurement strategies relevant to engineering management, including investment appraisal, risk assessment and value engineering to support sound business decisions.
<b>5</b>	Apply data analytics, digital tools (AI, machine learning, big data) and emerging technologies to inform evidence-based decision-making and optimise engineering systems in complex environments.
<b>6</b>	Explore how artificial intelligence (AI), data analytics, and digital technologies can support decision-making, predictive maintenance, and sustainability assessment.

	By the end of <b>Masters Stage</b> of the programme successful students will be able to do the following:
<b>7</b>	Apply systems thinking with AI to design sustainable and resilient engineering solutions.
<b>8</b>	Exhibit advanced interpersonal, communication and team leadership skills to effectively engage with stakeholders, lead multidisciplinary teams and deliver engineering projects in dynamic and diverse settings.
<b>9</b>	Independently design, execute and critically reflect on a substantial consultancy or research-based project, applying relevant methodologies to solve real-world engineering management problems.

### 13. Programme Requirements

*There are optional modules on this programme No*

#### Level 7:

*In order to complete this programme, a student must successfully complete all the following CORE modules (totalling 180 credits):*

Module Code	Module Name	Credit Value	PLO(s) assessed
EMGT700	Strategic Engineering Leadership and Innovation	30	PLO1, PLO2
EMGT701	Operations and Supply Chain Excellence with AI	30	PLO1, PLO3, PLO4, PLO5
EMGT702	Financial and Commercial Management for Engineers	30	PLO3, PLO4, PLO5
EMGT703	Digital Transformation and Data-Driven Decision Making with AI	30	PLO3, PLO5, PLO6
EMGT704	Sustainable Engineering Systems and Risk Management with AI	30	PLO2, PLO4, PLO5, PLO6, PLO7, PLO8
EMGT705	Engineering Consultancy and Capstone Project	30	PLO4, PLO5, PLO6, PLO7, PLO8, PLO9

### 14. Employability

The programme contributes to the development of the following graduate attributes.

Please refer to [Integrated Curriculum Design Framework](#) when completing this section.

<b>Professional</b>	The MSc Engineering Management with AI develops professionalism by immersing students in authentic engineering management practices that mirror contemporary industrial environments. Throughout the programme, students engage with real-world case studies, simulations, consultancy-style projects and industry-informed scenarios that require them to behave as emerging professionals rather than solely as academic learners. They learn to apply theoretical knowledge responsibly, justify decisions using evidence and present outcomes in formats consistent with professional engineering and management practice. Strong emphasis is placed on
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	<p>ethical leadership, corporate responsibility, sustainability and governance, ensuring that graduates understand their professional obligations to organisations, society and the environment. The capstone consultancy project further reinforces professionalism by requiring students to manage a substantial piece of work independently, interact with stakeholders, meet deadlines and communicate findings in a clear and persuasive manner. Collectively, these experiences cultivate professional judgement, accountability and confidence, enabling graduates to transition effectively into leadership and managerial roles within engineering contexts.</p>
<b>Adaptable</b>	<p>The programme actively develops adaptability by preparing students to operate in environments characterised by technological change, uncertainty and complexity. Students are exposed to emerging technologies such as artificial intelligence, data analytics and digital platforms and learn how these tools continuously reshape engineering operations, decision-making and organisational structures. Through scenario-based learning, simulations and problem-based activities, students encounter evolving conditions that require them to reassess assumptions, modify strategies and respond to unexpected challenges. The integration of sustainability, risk management and systems thinking further encourages students to view problems holistically and to consider multiple dimensions when designing solutions. By engaging with diverse assessment formats and interdisciplinary content, students develop cognitive flexibility and the ability to transfer knowledge across contexts. As a result, graduates leave the programme equipped to learn continuously, embrace innovation and adapt their skills to new roles, sectors and technologies over the course of their careers.</p>
<b>Engaged</b>	<p>The programme fosters engagement by positioning students as active participants in their learning and as contributors to wider professional and societal communities. Teaching approaches emphasise discussion, collaboration, reflection and applied inquiry, encouraging students to engage deeply with ideas rather than passively receive information. Group projects and team-based simulations promote peer interaction, shared problem-solving and exposure to diverse perspectives, reflecting the collaborative nature of modern engineering practice. Engagement is also strengthened through the programme's focus on real-world challenges such as climate change, sustainable development, digital transformation and operational resilience, which helps students see the relevance and impact of their studies beyond the classroom. The consultancy and capstone project provides a particularly strong mechanism for engagement, as students work on problems that matter to organisations and stakeholders. In this way, the programme develops graduates who are intellectually curious, socially aware and motivated to apply their expertise in ways that create positive change.</p>

**15. Additional Costs: Are there any additional costs on top of the fees?**

List any additional costs the students will have to meet and whether this is optional (e.g. an optional field trip) or essential (e.g. buying a lab coat). Give an estimation of the approximate

cost which may be a range. This information should be replicated in the Module Guide and will be published on the course page.

No, but all students buy some study materials such as books and provide their own basic study materials	✓
Yes (optional). All students buy some study materials such as books and provide their own basic study materials. In addition, there are some additional costs for optional activities associated with the programme (see above)	
Yes (essential). All students buy some study materials such as books and provide their own basic study materials. In addition, there are some essential additional costs associated with the programme (see above)	

## 16. Version Control

**Programme Specifications are checked annually and updated when changes are made to the programme.**

Version Number		Date	Details of change	Author
V1	Document created	01/02/2026	New programme	Dr Yahaya Alhassan
V2	Document changed			

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Version number:	5	Template owner:	Quality Team
Date reviewed:	Jun-24	Date of next review:	Jun-29