

# PROGRAMME SPECIFICATION

## 1. Key Information

<b>Programme Title:</b>	MSc Engineering Management
<b>Awarding Institution:</b>	Buckinghamshire New University
<b>Teaching Institution(s):</b>	Buckinghamshire New University
<b>Subject Cluster:</b>	Engineering
<b>Award Title (including separate Pathway Award Titles where offered):</b>	MSc Engineering Management
<b>Pathways (if applicable)</b>	Not applicable
<b>FHEQ level of final award:</b>	7
<b>Other award titles available (exit qualifications):</b>	Postgraduate Certificate Engineering Management Postgraduate Diploma Engineering Management
<b>Accreditation details:</b>	Accreditation will be sought from Institute of Engineering & Technology (IET) and Institute of Mechanical Engineers (IMechE), once a cohort is graduated.
<b>Length of programme:</b>	FT: 1 year; PT: 2 years
<b>Mode(s) of Study:</b>	FT and PT
<b>Mode of Delivery:</b>	In person (on-site) delivery
<b>Language of study:</b>	English
<b>QAA Subject Benchmark(s):</b>	Engineering (2023)
<b>Other external reference points (e.g. Apprenticeship Standard):</b>	UK Standard for Professional Engineering Competence and Commitment (UK-SPEC) The Accreditation of Higher Education Programmes (AHEP)
<b>Course Code(s):</b>	MSENMAFT / MSENMAPT
<b>UCAS Code(s):</b>	
<b>Approval date:</b>	June 2024
<b>Date of last update:</b>	

## 2. Programme Summary

The MSc in Engineering Management addresses a critical need for skilled professionals capable of navigating the complex intersection of engineering and management both in the UK and globally. In an increasingly competitive and technology-driven landscape, industries worldwide are seeking individuals who can effectively manage engineering projects, innovate processes, and lead diverse teams. From traditional sectors such as manufacturing and construction to emerging fields like renewable energy and smart infrastructure, the demand for engineering managers remains robust. Beyond the UK, countries experiencing rapid industrialization and infrastructure development, such as those in Asia and the Middle

East, also seek professionals with expertise in engineering management to drive progress and ensure sustainable growth. This programme caters to this global demand by providing students with the necessary skills and knowledge to excel in diverse industry settings.

The MSc Engineering Management curriculum combines technical expertise with managerial acumen, offering a comprehensive blend of engineering principles, business strategies, and leadership development. Students engage in coursework that covers essential topics such as project management, operations optimization, financial analysis, and risk assessment, preparing them to tackle real-world challenges in dynamic environments. Through industry collaborations, guest lectures and industry-based projects, students gain practical insights and global perspectives, enhancing their readiness to address the complexities of engineering management on a global scale. Graduates emerge equipped to thrive in a wide range of industries, contributing to innovation, efficiency, and sustainable development both at home and abroad.

### 3. Programme Aims and Learning Outcomes

#### Programme Aims

This programme aims to:

1. Equip students with a diverse skill set encompassing technical expertise, financial acumen, project management proficiency, and leadership capabilities, enabling them to address complex challenges at the intersection of engineering and management.
2. Cultivate strategic leaders who can effectively integrate engineering principles with management strategies to drive innovation, optimize processes, and achieve organizational objectives in diverse industrial settings.
3. Produce proficient postgraduates capable of evaluating business needs and constraints covering both strategic and operational issues, through the application of an enhanced understanding of technical sign-off responsibilities.
4. Extend analytical and research skills to investigate a chosen complex engineering subject systematically and coherently by demonstrating proficiency in primary research and integrating any relevant secondary research to produce solutions to engineering problems.
5. Foster a culture of lifelong learning by providing a foundation for continuous professional development, enabling graduates to stay abreast of emerging trends, technologies, and practices in engineering management throughout their careers.

#### Programme Learning Outcomes

##### Knowledge and Understanding (K)

On successful completion of the programme you will be able to:

ID	Learning Outcome
K1	Evaluate the foundational principles of engineering disciplines such as mechanical, electrical, civil, and industrial engineering.
K2	Explain the theories and concepts of management, including strategic planning, organizational behaviour, and financial management.
K3	Recognize the importance of sustainability, ethics, and social responsibility in engineering management practices.

<b>K4</b>	Comprehend the implications of global market dynamics, cultural differences, and regulatory frameworks on engineering projects and organizations.
<b>K5</b>	Acquire knowledge of emerging technologies and trends shaping the future of engineering and management disciplines.

### Analysis and Criticality (C)

On successful completion of the programme you will be able to:

<b>ID</b>	<b>Learning Outcome</b>
<b>C1</b>	Critically evaluate the feasibility and viability of engineering projects by analysing technical requirements, resource constraints, and stakeholder expectations.
<b>C2</b>	Assess the risks and uncertainties associated with engineering projects, using quantitative and qualitative methods to prioritize mitigation strategies and contingency plans.
<b>C3</b>	Analyse data from various sources, including market research, financial reports, and performance metrics, to identify patterns, trends, and opportunities for improvement.
<b>C4</b>	Evaluate the ethical implications of engineering decisions and actions, considering the impact on stakeholders, society, and the environment.
<b>C5</b>	Apply systems thinking and holistic approaches to problem-solving, recognizing the interdependencies and trade-offs inherent in complex engineering systems.

### Application and Practice (P)

On successful completion of the programme you will be able to:

<b>ID</b>	<b>Learning Outcome</b>
<b>P1</b>	Apply project management methodologies such as Agile, Waterfall, and Critical Path Method (CPM) to plan, execute, and monitor engineering projects from initiation to closure.
<b>P2</b>	Utilize simulation tools and software packages to model and optimize engineering processes, systems, and supply chains for efficiency and performance improvement.
<b>P3</b>	Design and implement quality management systems and continuous improvement initiatives to enhance product quality, reliability, and customer satisfaction.
<b>P4</b>	Engage in hands-on activities such as prototype development, testing, and validation to translate engineering concepts into tangible products and solutions.
<b>P5</b>	Collaborate effectively with multidisciplinary teams, demonstrating leadership, communication, and problem-solving skills in diverse project environments.

### Transferable skills and other attributes (T)

On successful completion of the programme you will be able to:

<b>ID</b>	<b>Learning Outcome</b>
<b>T1</b>	Communicate complex technical concepts and project updates effectively through written reports, oral presentations, and visual aids tailored to different audiences.

<b>T2</b>	Demonstrate leadership qualities such as empathy, integrity, and accountability, fostering a positive team culture and inspiring others to achieve common goals.
<b>T3</b>	Adapt to changing circumstances and unforeseen challenges by demonstrating flexibility, resilience, and a willingness to learn from failure.
<b>T4</b>	Foster creativity and innovation by generating and evaluating novel ideas, solutions, and approaches to engineering problems and opportunities.
<b>T5</b>	Develop self-awareness and interpersonal skills through reflection, feedback, and personal development activities aimed at continuous growth and improvement.

## Graduate Attributes

The BNU Graduate Attributes of: Knowledge and its application; Creativity; Social and ethical awareness and responsibility; and Leadership and self-development focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens.

The MSc in Engineering Management programme cultivates graduate attributes essential for innovative leadership in the 21st-century labour market. Through a foundation of Knowledge and its Application, students gain deep understanding of engineering principles and management theories, enabling effective problem-solving and application of knowledge in diverse contexts. Emphasizing Creativity, the programme encourages students to synthesize information and develop innovative solutions to complex challenges. Social and Ethical Awareness and Responsibility are woven into the curriculum, fostering sensitivity to global issues and ethical decision-making. Leadership and Self-Development are nurtured through practical experiences, promoting effective communication, teamwork, and adaptability. Graduates emerge as innovative leaders equipped to navigate the complexities of the modern workplace, make ethical decisions, and drive positive change as global citizens, leveraging their multidisciplinary skills and holistic understanding of engineering management.

## 4. Entry Requirements

The University's [general entry requirements](#) will apply to admission to this programme with the following additions / exceptions:

- An appropriate engineering or science undergraduate degree (2:2 or above) or an equivalent professional qualification or significant industrial and professional experience.
- If English is not your first language, you will also need an IELTS score of 6.5 overall or equivalent.

If you do not meet the entry requirements you may, if you have relevant professional experience, still be invited for interview, where you will be required to demonstrate the necessary knowledge and understanding for entry onto the course.

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules in accordance with our [accreditation of prior learning](#) (APL) process.

## 5. Programme Structure

Level	Modules (Code, Title and Credits)	Exit Awards
<b>Level 7</b>	<p><b>Core modules:</b>                      ENG7031 Operations and Quality Management (20 Cr)                      ENG7032 Financial Decision Making (20 Cr)                      ENG7033 Ethics, Sustainability and Environmental Assessment (20 Cr)                      CAD7039 Project Management (20 Cr)                      ENG7034 Lean and Agile Supply Chain Management (20 Cr)                      ENG7035 Individual Research Project (60 Cr)</p> <p><b>Option modules:</b>                      CAD7042 Manufacturing Automation, Robotics and IoT (20 Cr)                      CAD7037 Digital Twins and Manufacturing (20 Cr)</p>	60 credits - PGCert Engineering Management 120 credits - PGDip Engineering Management 180 credits - MSc Engineering Management

Please note: Not all option modules will necessarily be offered in any one year. Other option modules may also be introduced at a later stage enabling the programme to respond to changes in the subject area.

## 6. Learning, Teaching and Assessment

### Learning and teaching

A comprehensive Induction Programme will be held in the first month to ensure learners have the necessary base and study skills to benefit fully from the course. During the induction learners are made aware of opportunities/resources to support their learning including, but not limited to library resources, the Learning and Development Unit, and disability services.

The learning and teaching strategy is focused on the needs of industry, will be flexible to match the abilities of the learners and the logistics of the programme. Considerations will be made to foster the awareness and utilisation of emerging technologies facilitating close interaction between industrial partners, learner workplaces, the academia and professional organisations.

The attendance in campus is the main mode of delivery, supported by online learning materials that will be made available through the virtual learning environment.

- **Lecturers and Tutorials:** A variety of teaching and learning strategies and methodologies are evident within the Programme structure. Lectures will be used to deliver the overarching topics. Tutorials will then be used to work through examples and case studies reinforcing the lectures.
- **Seminars:** In addition to the traditional lecture and tutorial approach, discursive seminars are used extensively to develop and reinforce group dynamics and interpersonal skills. This is particularly useful where higher level cognitive and presentation skills are required. The importance of previous learning experience is also identified as critical and the knowledge which the individual learners bring to a group forum gives a value-added dimension to the learning experience. Case studies will be utilised particularly within the Engineering modules and specialist lecturers be invited and external experts will be integrated within appropriate modules. This will add industrial input to the module material and is another area which is of value to the learning process.
- **Workshops and presentations** are also used to help develop personal research and reflection skills as well as learning to express oneself by portraying a commanding presence.
- **Laboratory Sessions and practical demonstrations:** Laboratory sessions allow learners to practically apply the theoretical aspects of the course which encourages learner experimentation, this could be physical exercises or software-based activities. Practical sessions will allow the acquisition of specific skills and techniques, and highlight the health and safety requirements of materials, equipment and processes.
- **Dissertation:** learners will undertake a major project which would normally be work-based for part time learners. During this period the learners are expected to draw on knowledge gained from studying the taught modules and apply it in an industrial context. A project handbook is issued to all learners at the beginning of the programme which contains all the necessary details regarding completion and presentation of the work. If a situation arises, where a learner is unable to find a suitable industry-based project for the dissertation, the course team will support the learner by agreeing topics projects which have industrial relevance from their research, development and consultancy activities.

## Assessment

There are a variety of assessment vehicles, which are a selection of those found in the QAA Engineering Benchmark. Assignments are carried out in the learner's own time, in-class assignments, worksheets, presentations; laboratory/CAD exercises may also be used. The forms of assessment have been chosen to motivate learners to achieve and to create positive learning opportunities, and to meet the learning outcomes of the programme.

A variety of assessment methods will be used within this programme as appropriate to meet the learning outcomes. The following assessment activities are used on this programme:

- **Written Assignment** – This will be mainly in the form of written documents, where learners are requested to present research material in specific subjects and edit it to fit the desired outcomes.
- **Reports** – Learners are encouraged to document their entire learning progress throughout the degree, and some of that documentation will be delivered in the form of reflective and critically evaluative reports and will be assessed and marked.
- **Portfolio** – Learners will be expected to produce a portfolio as part of the group work. Learners are taught on the different processes involved in producing an industry-standard portfolio and will be assessed on the outcomes.
- **Presentation Assessment** – Presentation skills are a key element when working in teams and presenting ideas. Throughout the degree, learners are expected to produce coursework and present it to a range of audiences (including industry representatives), who's feedback will contribute to the assessment.
- **Group-work** – This mode of assessment develops transferable skills in the areas of oral communication, negotiation and interpersonal skills. Working in a group can also promote the sharing of ideas and practical problem-solving skills. Learners will have the opportunity to undertake team-based assessments; where they are assessed, the grade for the assignment will be a combination of a shared grade as a group based on specific assessment criteria and individual element.

The group work will be facilitated using the Virtual Learning Environment (VLE) where the learners will be sharing their work with each other, discuss and monitor progress. In a special circumstance, if there is no learner available to work as a team, the tutor will suggest other options of collaborating such as finding other engineers/ professionals and lecturers to provide inputs as appropriate.

Assessment strategies support learners' understanding of their learning processes and are designed to foster a deep approach to learning. Strategies also promote autonomous learning and self-evaluation as vital elements within the overall learning process.

Summative assessment will take place during and at the end of the module. Submitted work will be assessed on the achievement of the module Learning Outcomes and awarded a grade based upon the assessment criteria. The assessments will take place with a full review of the briefs and all the supporting development work, which should clearly document the breadth and depth of research and the development of conceptual ideas for each project undertaken.

Summative feedback is provided with three weeks turnaround. However formative feedback will normally be provided prior to this during the assessment process, to ensure that learners are given opportunities to respond to feedback prior to submission. Formative feedback and

feed forward are considered a vital part of the assessment process. More formal oral and/or written formative feedback is given at key identified points, usually during learner led presentations of work in progress. Self and peer-evaluation constitute an important part of formative assessment and, on occasion, of the formal summative assessment process.

## Contact Hours

1 unit of credit is the equivalent of 10 notional learning hours. Full-time postgraduate learners study 180 credits (1800 hours) as per year or 'stage' of the course. For the part time delivery the hours will be completed over the two years of study.

## 7. Programme Regulations

This programme will be subject to the *Regulations for Taught Degree Programmes (2023)*.

## 8. Support for learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals and databases - many of which are available in electronic format – and support from trained library staff
- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC, laptop, tablet or mobile device
- Access to the MyBNU portal where you can access all University systems, information and news, record your attendance at sessions, and access your personalised timetable
- Academic Registry staff providing general guidance on University regulations, exams, and other aspects of students and course administration
- Central student services, including teams supporting academic skills development, career success, student finance, accommodation, chaplaincy, disability and counselling
- Support from the Bucks Students' Union, including the Students' Union Advice Centre which offers free and confidential advice on University processes.

## 9. Programme monitoring and review

BNU has a number of ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of their programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys
- Programme Committees, via appointed student representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- An initial event to approve the programme for delivery
- An annual report submitted by the External Examiner following a process of external moderation of work submitted for assessment
- The Annual Monitoring process, which is overseen by the University's Education Committee
- Review by the relevant PSRB(s)

- Periodic Subject Review events held every five years
- Other sector compliance and review mechanisms

## 10. Internal and external reference points

Design and development of this programme has been informed by the following internal and external reference points:

- The Framework for Higher Education Qualifications (FHEQ)
- UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)
- The Accreditation of Higher Education Programmes (AHEP), Engineering Council
- The QAA Engineering Subject Benchmark Statement – see detailed mapping below
- The QAA Master's Degree Characteristics Statement
- The Apprenticeship Standard – see detailed mapping below
- The BNU Qualifications and Credit Framework
- The BNU Grading Descriptors
- The University Strategy Thrive 28

### Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement: Engineering	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
Science, mathematics and engineering principles	X											X								
Engineering analysis, including use of computational tools and techniques		X						X				X								
Design, creativity and innovation, including applying an integrated or systems approach					X					X									X	
Engineering and society, incorporating sustainability, ethics, risk, security and equity, diversity and inclusion			X	X			X		X				X					X		X
Engineering practice, including teamwork, project management and use of practical equipment.		X				X					X			X	X	X	X			

### Mapping of Programme Learning Outcomes to Modules

Programme Learning Outcome	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)					
	Module Code	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5
<b>Level 7</b>																					
ENG7031 Operations and Quality Management	X	X			X			X						X			X				
ENG7032 Financial Decision Making		X						X									X				
ENG7033 Ethics, Sustainability and Environmental Assessment			X						X						X						
CAD7039 Project Management		X		X	X	X	X				X							X			
ENG7034 Lean and Agile Supply Chain Management	X	X			X							X	X		X			X			
ENG7035 Individual Research Project			X	X		X	X		X	X				X			X		X	X	X
CAD7042 Manufacturing Automation, Robotics and IoT (Option)	X				X					X		X		X						X	
CAD7037 Digital Twins and Manufacturing (Option)	X				X					X		X		X						X	