



Programme Specification (Postgraduate)

FOR ENTRY YEAR: 2023/24

Date created: Click or tap here to enter text.

Last amended:05/07/2023

Version no. 2

1. Programme title(s) and code(s)

MSc in Advanced Mechanical Engineering with Management

MSc in Advanced Mechanical Engineering with Management and Industry

Postgraduate Diploma (PGDip) in Advanced Mechanical Engineering with Management (exit award only)

Postgraduate Diploma (PGDip) in Advanced Mechanical Engineering with Management and Industry (exit award only)

Postgraduate Certificate (PGCert) in Advanced Engineering with Management (exit award only)

Postgraduate Certificate (PGCert) in Advanced Engineering (exit award only)

Postgraduate Certificate (PGCert) in Engineering with Management (exit award only)

Postgraduate Certificate (PGCert) in Management (exit award only)

[HECOS Code](#)

HECOS Code	%
100190	75
100089	25

2. Awarding body or institution

University of Leicester

3. a) Mode of study

MSc/PGDip in Advanced Mechanical Engineering with Management: Full-time

MSc in Advanced Mechanical Engineering with Management and Industry: Full-time.

With Industry only: The taught modules would all be taken in the first two semesters. This is followed by the industrial placement, which is between 3 and 12 months long, and would be taken following the end of the first year January exam period. This is followed by the in-house project, taking 10 weeks.

b) Type of study

The taught modules and project are campus based.

The Industrial placement ('with Industry' programme only) is off campus, on the site of the Placement Provider.

4. Registration periods

MSc in Advanced Mechanical Engineering with Management (September start, Full-time)

The normal period of registration is 12 months.

The maximum period of registration is 24 months.

MSc in Advanced Mechanical Engineering with Management with Industry (September start):
The normal period of registration is 24 months.
The maximum period of registration is 36 months.

5. Typical entry requirements

Academic:

Candidates should normally have at least a good second class honours degree in a relevant subject from a British university; or a qualification recognized by the University as equivalent.

English language

Candidates whose first language is not English will be required to provide evidence of appropriate language skills. A score of 6.5 in IELTS or an equivalent is required, with no less than a score of 5.5 in any element, but if candidates have been instructed in their u/g courses in English in certain countries for a period of at least two years, this may be deemed adequate. Courses at the University's English Teaching Unit are offered to candidates who fail this requirement. The course must be completed before the MSc can begin.

6. Accreditation of Prior Learning

None

7. Programme aims

This is an advanced career entry programme focussed on industrial careers in the engineering sector. The technical focus of this programme is state-of-the-art methodologies and techniques relevant to design of mechanical systems and components. Particular attention will be given to the development of investigative, modelling and computational strategies. The course covers fluid dynamics, solid structures, advanced and conventional materials and control systems in combination with a rigorous introduction to those management theories, models, frameworks and techniques that are likely to be important to a professional Engineer. The combination of advanced technical Engineering skills and knowledge of Management theory and practice equips students with the knowledge and skills required to secure leadership roles in global engineering industries. At the end of the programme students should:

- Demonstrate specific knowledge of advanced topics in engineering, specifically in mechanical fields, and to be able to apply this knowledge in the design and simulation of real-world systems;
- Demonstrate clear communication skills and be competent users of IT communication techniques (e.g. oral presentation and report writing);
- Work effectively as part of both multi- and single-disciplinary teams;
- Have knowledge of core management subjects, be able to explain them, critique them, select, apply them to engineering management situations
- Pursue research (MSc graduates only)

For the aims, learning outcomes and special features of the Year in Industry, please see <https://le.ac.uk/study/postgraduates/courses/industry>

8. Reference points used to inform the programme specification

- QAA Benchmarking Statement
- Framework for Higher Education Qualifications (FHEQ)
- UK Quality Code for Higher Education
- Engineering Accreditation Board (EAB) Masters Degree other than Integrated Masters, and EngD Learning Outcomes (AHEP 3rd Edition)
- UK-SPEC (UK Standard for Professional Engineering Competence)
- Engineering Council Compensation and Condonement requirements November 2018.
- University Learning Strategy
- University Assessment Strategy
- University of Leicester Periodic Developmental Review Report
- External Examiners' reports (annual)
- United Nations Education for Sustainable Development Goals
- Student Destinations Data

9. Programme Outcomes

Unless otherwise stated, programme outcomes apply to all awards specified in 1. Programme title(s).

a) Discipline specific knowledge and competencies

i) Knowledge

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
<p>Core knowledge of fluid dynamics, solid structures, advanced and conventional materials, surfaces, MATLAB / CAD and control systems.</p> <p>A core knowledge of management subjects including the business environment, accountability, representation and control. Knowledge of the quantitative and qualitative methods used in management research and what constitutes a methodology. Students should be able to synthesise and apply knowledge to engineering management issues.</p>	<p>Lectures, Specified reading, Laboratory classes, Design exercises, Tutorials, Group discussion, directed reading and exercises, private study, assignment feedback: formative and summative.</p> <p>Dissertation research process, research methods training.</p>	<p>Module examinations, Laboratory, design exercises, literature review reports, oral presentations and tutorial performance. Essays (individual), group discussions, computer based exercises, case study exercises. Research proposal, ethics approval and dissertation.</p>

ii) Concepts

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
<p>Design, selection and testing of materials, mechanisms in structures, design of flows, robust control.</p> <p>Graduates should be able to explain the core concepts of management as they relate to engineering activities.</p>	<p>Lectures, Practical classes, Tutorials, Group discussion, Directed reading, assignment feedback, private-study.</p> <p>Dissertation supervision process, independent research.</p>	<p>Module examinations, Laboratory, design exercise and literature review reports, oral presentations, tutorial. Essays (individual), group discussions, case study exercises, research proposal and dissertation.</p>

iii) Techniques

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
<p>Practical demonstration of experimental methods for fluid dynamics and structures. Competent use of standard and specialized engineering design tools. Model-based control Competent use of a variety of engineering design tools, conventions of academic writing and qualitative and quantitative evaluation to solve management problems relevant to engineering.</p>	<p>Laboratory classes, Individual independent project and research, module design exercise supervision, Practical demonstrations, Lectures. Self-directed private-study. Assignment feedback, formative and summative. Dissertation research process and methods training.</p>	<p>Laboratory and design exercise reports, module design exercise assessment, essays (individual), group discussions, case study exercises, and the dissertation. Module examinations.</p>

iv) Critical analysis

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
<p>Critical appraisal of results and literature, the discipline of management and its application in engineering, including in different cultural, environmental and organisational contexts.</p>	<p>Laboratory, design exercise and project supervision</p>	<p>Laboratory, module design exercise and literature review reports. Essays (individual), group discussion, case study exercises. Project progress and dissertation.</p>

v) Presentation

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
<p>Presentation of scientific results, management analysis and conclusions in an organized and appropriate medium to a professional standard with clarity, fluency and coherency. Participation in scientific discussion.</p>	<p>Tutorials, Module seminars, Laboratory classes, module design exercise supervision, Project supervision, group discussion, directed reading and exercises. Dissertation.</p>	<p>Module presentations, Laboratory, module design exercise and dissertation. Essays, examinations and case study exercises.</p>

vi) Appraisal of evidence

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Experimental methods, Project design. Ability to locate, organise and assess data, analyse complex ideas and understand and criticise different arguments with independent inquiry at an advanced level.	Lectures, Laboratory classes, Project supervision. Independent research, group discussion, directed reading and exercises.	Written examinations, laboratory and design exercise reports, dissertation, individual essays.

b) Transferable skills

i) Research skills

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Literature review, Experimental design, Laboratory skills, Data analysis. Demonstration of intellectual independence through identifying and delivering a credible and substantial research project at an advanced level.	Tutorials, lectures, Laboratory classes, module design exercise work. Research methodology module, dissertation supervision meetings.	Module design exercise reports and oral presentations, Course work, dissertation.

ii) Communication skills

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Report writing, Scientific Communication. Ability to work collaboratively and responsibility in teams.	Dissertation supervision meetings, laboratory and design exercise classes, Tutorials/dissertation supervision process.	Laboratory, design and group exercise reports. Research proposal and dissertation.

iii) Data presentation

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
IT, Analytical and graphical methods, CAD drawings, Statistics. Ability to locate, organise and marshal evidence and select and apply appropriate software packages for quantitative analysis.	Dissertation supervision meetings, course work (laboratories, module design exercises, case studies and self-directed private study)	Seminars, Course work/case-study reports, Research proposal and dissertation, Module examinations

iv) Working relationships

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Project management, Organization skills, Time management, Collaborative and responsible working in teams.	Dissertation supervision meetings (incl. the establishment of a working relationship with supervisor), Group working in modules (laboratories and design exercises).	Formative assessment based on informal qualitative feedback on content and performance from teacher and peers. Module design exercise assessment, Seminar performance. Dissertation.

v) Managing learning

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Study skills, Information management, Developing specialization and interests, Project management. Ability to reflect upon behaviour and skills with a view to personal and professional development. Identifying and delivering a credible and substantial research project at an advanced level.	Tutorials and seminars, Library and IT skills sessions, dissertation supervision meetings and process.	Course work, module design exercise assessment, Research proposal and dissertation.

vi) Career management

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Ability to reflect on motivation, strengths, interests and skills with a view to personal and professional development. Research an area which may be relevant to the student's career preferences.	Tutorials, independent self-directed research into career opportunities using CDS. Dissertation research.	Discussion within forums/tutorials, Development Plan. Dissertation.
1.		

10. Special features

11. This course is accredited by IMechE and IET subject to 5 yearly re accreditation.-Indicators of programme quality

The programme is subject to all normal departmental, college and institutional academic quality assurance processes.

12. Criteria for award and classification

As defined in [Senate Regulation 6](#): Regulations governing taught postgraduate programmes of study.

The following additional award requirements for this programme have been approved:

- This programme follows the Scheme of Assessment for Master degree programmes with a structure of 120 credits of taught modules and a project of 60 credits, with the variation (required by the Engineering Council for accreditation purposes) that a maximum of 15 credits may be failed at grade D (40-49%) and no credits failed at grade F (0-39%). Students who fail to meet this criterion will be considered for an interim award based on the taught component of the programme.
- A student who successfully completes an industry placement but does not meet the award requirements for an MSc may be considered for the exit award of PGDip with management and industry.

Special conditions apply for the PGCert exit route to ensure engineering / management learning outcomes achieved are appropriate to the title of the award. The title of award offered, a function of the number of modules passed in each discipline and therefore the balance of ILOs achieved, is detailed in the Table below:

AWARD MATRIX FOR TAUGHT MODULES (NUMBER IN BRACKETS IS CREDITS PASSED)		NUMBER OF 15-CREDIT MN7xxx MODULES PASSED			
		0	1	2	3
NUMBER OF 15- CREDIT EG7xxx MODULES PASSED	0	FAIL (0)	FAIL (15)	FAIL (30)	PGCert IN MANAGEMENT (45)
	1	FAIL (15)	FAIL (30)	PGCert IN ENGINEERING WITH MANAGEMENT (45)	PGCert IN ENGINEERING WITH MANAGEMENT (60)
	2	FAIL (30)	PGCert in ENGINEERING WITH MANAGEMENT (45)	PGCert IN ENGINEERING WITH MANAGEMENT (60)	PGCert IN ENGINEERING WITH MANAGEMENT (75)
	3	PGCert in ENGINEERING (45)	PGCert in ENGINEERING WITH MANAGEMENT (60)	PGCert IN ENGINEERING WITH MANAGEMENT (75)	PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (90)

4	PGCert in ENGINEERING (60)	PGCert in ENGINEERING WITH MANAGEMENT (75)	PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (90)	MSc/PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (105)
5	PGCert in ENGINEERING (75)	PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (90)	MSc/PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (105)	MSc/PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (120)

13. Progression points

As defined in [Senate Regulation 6](#): Regulations governing taught postgraduate programmes of study.

The following additional award requirements for this programme have been approved:

A Placement Student will revert back to the degree without Year in Industry if:

1. At the semester 1 exam board, they have less than one module at merit level and any failed modules at <50%. No progression rule is applied at the semester 2 exam board. In the case of failed modules with mitigating circumstances, the semester 1 board will use its discretion.
2. They fail to secure an industrial placement role.
3. They fail to pass the assessment related to the industrial placement.
4. The industrial placement ends early due to the behaviour of the Placement Student not being in accordance with the University's Regulations for Students, Student Responsibilities. The Placement Student will need to return to the University and carry out an in-house project in the School or Department, as per the normal non-Industry MSc. To prevent such an incident from happening, processes are in place to identify any possible issues or concerns early in the industrial placement role. This includes a start check, regular communications, visits to the workplace (physical and/or virtual) and evaluation. Communication and contact between the Placement Student, Placement Provider and University provides support should issues arise.
5. They discontinue their industrial placement and carry out an in-house project in the School or Department, as per the normal non-Industry MSc.

In the event that a Placement Student is moved to the standard campus-based MSc, the Placement Provider will be notified immediately. For overseas students, the UKBA will also be informed immediately. Placement Provider's will be made that any contract of employment shall be made subject to satisfactory completion of the taught part of the MSc.

Three months is the minimum time required for an industrial placement to be formally recognised. If the industrial placement is terminated earlier than 3 months as a result of event outside of the Placement Students control (for example redundancy, or company liquidation), the following process will be adopted:

1. If the Placement Student has completed less than 2 months, they will be supported to search for another placement to take them up to the required minimum of 3 months for the

industrial placement to be formally recognised. If the Placement Student does not find a placement to meet this criteria they will be required to suspend and transferred onto the degree without industry.

2. If the Placement Student has completed 2 months, they will be supported to search for another placement to take them up to the 3 months required for the industrial placement to be formally recognised. If the Placement Student cannot source an additional placement to take them to 3 months, assessments related to the industrial placement will be set for the student to make it possible for the individual learning objectives for the industrial placement to be met. This will allow with industry to be recognised in the degree certificate.
3. The duration of time between the two Placement Providers to meet the minimum 3 months of an industrial placement must not exceed the period of time required to comply with visa requirements.
4. A Placement Student is permitted to undertake an industrial placement which runs across two academic years.

14. Rules relating to re-sits or re-submissions

As defined in [Senate Regulations](#) - refer to the version of *Senate Regulation 6 governing taught postgraduate programmes of study* relevant to year of entry.

15. External Examiners reports

The details of the External Examiner(s) for this programme and the most recent External Examiners' reports for this programme can be found at exampapers@Leicester [log-in required]

Appendix 1: Programme structure (programme regulations)

The University regularly reviews its programmes and modules to ensure that they reflect the current status of the discipline and offer the best learning experience to students. On occasion, it may be necessary to alter particular aspects of a course or module.

Updates to the programme

Module affected	Update
MN7403 Accounting and Finance for Managers	Option module deleted
MN7402 Business Economics	Option module deleted
MN7401 Organisational Behaviour	Option module deleted
MN7374 International Human Resource Management	Option module deleted
MN7437 Accounting and Finance for Non-Specialist Managers	New core module
MN7436 Business Economics for Non-Specialists	New core module

MSc Advanced Mechanical Engineering with Management

Credit breakdown

Status	Year long	Semester 1	Semester 2	Other delivery period
Core taught	n/a	75 credits	15 credits	n/a
Optional	n/a	n/a	30 credits	n/a
Dissertation/project	n/a	n/a	n/a	60 credits

180 credits in total

Level 7/Year 1 2023/24

Core modules

Delivery period	Code	Title	Credits
Semester 1	EG7010	Engineering Design Case Study	15 credits
Semester 1	EG7115	Fluid Instability, Transition and Turbulence	15 credits
Semester 1	EG7116	Advanced Solid Mechanics	15 credits
Semester 1	MN7437	Accounting and Finance for Non-Specialist Managers [^]	15 credits
Semester 1	MN7436	Business Economics for Non-Specialists [^]	15 credits
Semester 2	MN7406	International Business [^]	15 credits
Semester 1	ADEG7221	Placement Preparation 1*	n/a

Delivery period	Code	Title	Credits
Semester 2	ADEG7222	Placement Preparation 2*	n/a

Notes

* The 'with Industry' programme includes additional preparation modules and an industrial placement of 3-12 months, following the end of the first year exam period, with students returning to UoL to complete the project/dissertation after their placement.

Option modules

Delivery period	Code	Title	Credits
Semester 2	EG7125	Computational Fluid Dynamics**	15 credits
Semester 2	EG7126	Advanced Composite Materials**	15 credits
Semester 2	EG7422	Advanced Gas Turbines**	15 credits

Notes

^Management specialist modules delivered by the School of Business.

**Technical specialist modules delivered by the School of Engineering of which students must choose 30 credits in Semester 2.

This is an indicative list of option modules and not definitive of what will be available. Option module choice is also subject to availability, timetabling, student number restrictions and, where appropriate, students having taken appropriate pre-requisite modules.

Level 7/Year 2 2024/25

Core modules

Delivery period	Code	Title	Credits
Choose an item.	ADEG7223	On Placement*	n/a
Choose an item.	EG7302	Engineering Management Project*	60 credits

Notes

The "with industry" programme includes an industrial placement of 3-12 months, following the end of the final exam period of the taught phase of the programme, with students returning to UoL to complete the project/dissertation after their placement

Appendix 2: Module specifications

See taught postgraduate [module specification database](#) (Note - modules are organized by year of delivery).