Programme Specification (Postgraduate)

FOR ENTRY YEAR: 2025/26

Date created: 16/04/21 **Last amended:** 14/02/2025 **Version no.** 1

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

MSc in Advanced Electrical and Electronic Engineering
MSc in Advanced Electrical and Electronic Engineering with Industry
Postgraduate Diploma (PGDip) in Advanced Electrical and Electronic Engineering *
Postgraduate Diploma (PGDip) in Advanced Electrical and Electronic Engineering with Industry *
Postgraduate Certificate (PGCert) Advanced Electrical and Electronic Engineering *

Notes

* An award marked with an asterisk is only available as an exit award and is not available for students to register onto and is not accredited with the Engineering Council

HECOS Code

HECOS Code	%
100163	100

2. Awarding body or institution

University of Leicester

3. a) Mode of study

Full-time

Full-Time
MSc in Advanced Electrical and Electronic Engineering: Full time
MSc in Advanced Electrical and Electronic Engineering with Industry: Full time.

With Industry: 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 Jan exam period. This is followed by the in-house project, taking 13 weeks.

b) Type of study

Campus-based (taught modules and project)
With Industry: The Industrial placement is off campus, on the site of the Placement Provider.

4. Registration periods

MSc in Advanced Electrical and Electronic Engineering (September start, Full-time)
The normal period of registration is 12 months.
The maximum period of registration is 24 months.

MSc in Advanced Electrical and Electronic Engineering with Industry (September start Full Time):
The normal period of registration is 24 months.
The maximum period of registration is 36 months.

5. Typical entry requirements

Candidates should have at least a good second-class honours degree in a relevant subject from a British University or its equivalent; or a qualification recognised 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 6.0 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

No accreditation of Prior Learning is normally considered.

7. Programme aims

The course provides a coherent selection of electrical and electronic engineering subjects to advanced level. Module combinations include communications and signal processing through control engineering to electrical machines and drives. The course is ideal for the engineer who wishes to follow a career in the design and implementation of electrical and electronic circuits within the wider engineering environment**.**

The programmes aim to satisfy the criteria of the accrediting engineering institutions. These are based on the Engineering Council's Accreditation of Higher Education Programmes (AHEP4) learning outcomes. These are defined in 5 overarching engineering specific areas of learning:

- Science and Mathematics (M1)
- Engineering Analysis (M2-M4)
- Design and Innovation (M5)
- The Engineer and Society (M7)
- Engineering Practice (M16-M17)

Programme-level Intended Learning Outcomes for the degree programmes are mapped, using the shorthand codes above, to these overarching outcomes in section 9 - Programme Outcomes below. Each of these overarching engineering specific areas of learning are mapped to module-level Intended Learning Outcomes and assessment elements, and are detailed in the module specifications.

For the aims, learning outcomes and special features of the with Industry variant, 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
- University Education Strategy
- University Assessment Strategy [log in required]
- University of Leicester Periodic Developmental Review Report
- External Examiners' reports (annual)
- United Nations Education for Sustainable Development Goals
- Student Destinations Data
- Engineering Accreditation Board (EAB) Masters Degree other than Integrated Masters, and EngD Learning Outcomes (AHEP 4th Edition)
- UK-SPEC (UK Standard for Professional Engineering Competence)
- Engineering Council Compensation and Condonement requirements November 2021.

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?
Core knowledge of Electrical and Electronic Engineering, and closely related subjects such as Communications, Signal Processing and Control	Lectures, Specified reading, Laboratory classes, Design exercises, Tutorials	Module examinations, Laboratory, design exercise and literature review reports, oral presentations, tutorial performance
A successful student will be able to apply comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of engineering informed by a critical awareness of new development and the wider context of engineering (M1).	Lectures, Specified reading, Laboratory classes, Design exercises, Tutorials	Module examinations, Laboratory, design exercise and literature review reports, oral presentations, tutorial performance

ii) Concepts

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
A variety of concepts in Electrical and Electronic Engineering and related subjects will be presented at an advanced level	Lectures, Practical classes, Tutorials	Module examinations, Laboratory, design exercise and literature review reports, oral presentations, tutorial
A successful student will be able to design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards. (M5)	Independent project, project supervision.	Major project report and presentation.

iii) Techniques

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Practical demonstration of experimental methods, Competent use of a variety of engineering design tools.	Laboratory classes, Individual Project and module design exercise supervision, Practical demonstrations, Lectures	Laboratory and design exercise reports, module design exercise assessment, Individual Project progress and report, Module examinations
A successful student will be able to select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. (M3)	Laboratory classes, Individual Project and module design exercise supervision, Practical demonstrations, Lectures	Laboratory and design exercise reports, module design exercise assessment, Individual Project progress and report, Module examinations

iv) Critical analysis

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Critical appraisal of results. Critical review of literature	Laboratory, design exercise and project supervision	Laboratory, module design exercise and literature review reports, Project progress and report
A successful student will be able to formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed. (M2)	Lecture, tutorial, computer practical class, coursework assignment, presentation.	Examination, Oral presentation, contribution to discussion, problem-based exercise, project report.
A successful student will be able to evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) and minimise adverse impacts. (M7)	Lecture, group project, independent project.	Project report, coursework assignment, presentation.

v) Presentation

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Presentation of scientific results, Participation in scientific discussion	Tutorials, Module seminars, Laboratory classes, module design exercise supervision, Project supervision	Module presentations, Laboratory, module design exercise and Individual project report

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
A successful student will be able to communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. (M17)	Tutorials, Module seminars, Laboratory classes, module design exercise supervision, Project supervision	Module presentations, Laboratory, module design exercise and Individual project report

vi) Appraisal of evidence

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Experimental methods, Project design	Lectures, Laboratory classes, Project supervision	Written examinations, laboratory and design exercise reports, Project reports
A successful student will be able to select and critically evaluate technical literature and other sources of information to solve complex problems. (M4)	Major project work, including team meetings and supervision meetings.	Major project report and presentation.
A successful student will be able to evaluate customer and user needs taking into account the wider engineering context (M5)	Major project work, including team meetings and supervision meetings.	Major project report and presentation.

b) Transferable skills

i) Research skills

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Literature review, Experimental design, Laboratory skills, Data analysis	Tutorials, lectures, Laboratory classes, module design exercise work, Project supervision meetings	Module design exercise reports and oral presentations, Course work, Individual project report

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
A successful student will be able to select and critically evaluate technical literature and other sources of information to solve complex problems. (M4)	Major project work, including team meetings and supervision meetings.	Major project report and presentation.

ii) Communication skills

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Report writing, Scientific Communication	Project supervision meetings, laboratory and design exercise classes, Tutorials	Laboratory, design exercise and literature review reports, Individual project report
Present technical and non-technical information orally, in an appropriate form for a given audience (M17).	Tutorial, group project, independent research, project supervision.	Presentation
Communicate technical and non-technical information in an appropriate written form for a given audience (M17).	Group project, independent research, project supervision.	Written assignment, project report, group report.

iii) Data presentation

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
IT, Analytical and graphical methods, CAD drawings, Statistics	Project supervision meetings, course work (laboratories, module design exercises)	Seminars, Course work reports, Project reports, Module examinations

iv) Working relationships

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Project management, Organization skills, Time management, Working in groups	Project supervision meetings, Group working in modules (laboratories and design exercises)	Module design exercise assessment, Seminar performance

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
A successful student will be able to function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance (M16).	Lecture, tutorial, group project, project supervision.	Group report, presentation, Individual report.

v) Managing learning

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Study skills, Information management, Developing specialization and interests, Project management	Tutorials and seminars, Library and IT skills sessions, project supervision meetings	Course work, module design exercise assessment, project assessment

10. Special features

The course is accredited by the Institution of Engineering and Technology (IET) subject to 5 yearly re-accreditation.

10a. Research-inspired Education

Students on this programme will advance through the four quadrants of the University of Leicester Research-inspired Education Framework as follows:

RiE Quadrant	Narrative
	This engineering programme is built on four pillars of Research-inspired Education, ensuring that students develop both foundational knowledge and advanced research skills. This holistic approach integrates staff expertise, hands-on experience, and active research engagement into the curriculum, fostering critical thinking, creativity, and professional readiness.
Research-briefed Bringing staff research content into the curriculum.	**Research-briefed**: Academics actively incorporate their latest research findings and technological advancements into teaching and learning resources. This allows students to explore case studies, research papers, and cutting-edge developments, providing context and relevance by connecting theoretical engineering concepts to real-world applications and societal challenges.
Research-based Framed enquiry for exploring	**Research-based**: Supported by academics, the students explore existing knowledge through several modules which involve problem-based learning, independent and group projects, and practical laboratories. These activities promote discovery and intellectual curiosity.

existing knowledge. **Research-oriented** Students critique published research content and process. **Research-apprenticed** Experiencing the research process and methods; building new knowledge.	**Research-oriented**: Facilitated by a series of training opportunities and assessments, students identify and critically evaluate published research findings and practices. This develops their ability to evaluate and contextualize information within their field and supplements their own experimental design, data analysis, and conclusion derivation. **Research-apprenticed**: Under close mentorship of the academic members, the students engage with research-driven projects and practical coursework which are closely related to the ongoing research at the School of Engineering. They engage in all stages of a typical research project, including defining objectives, experimental design, data analysis, and presenting findings both orally and in written formats. This process is supported by regular supervision meetings. This integration of research equips students with the skills and knowledge to excel in both academic and professional engineering environments.

As part of studying at a research-intensive university, students on this programme have the following extra or co-curricular opportunities available to them to gain exposure to research culture:

This programme provides various opportunities for students to engage with the ongoing research within the five distinct groups and contribute positively to the vibrant research culture at the School. For instance, students are invited to monthly seminars delivered by researchers and academics which increases their exposure to latest knowledge and provides networking opportunities. Guest lecturers from other institutes and industry are invited regularly to present their solutions to real-world challenges. Moreover, individual and group projects, co-designed by students, are largely aligned with the ongoing research work by the academic supervisors at the School.

Teaching on this programme will be research-informed (it draws consciously on systematic inquiry into the teaching and learning process itself) in the following way:

The good practices in research-informed teaching pedagogy are disseminated to module convenors through the School's teaching away day, peer observation of teaching, and via central email communications. Academics are supported to obtain relevant teaching qualifications and encouraged to participate in the yearly teaching and learning conference held at the university.

Curriculum delivery is routinely discussed in the Education Committee and meetings between education and programme directors.

11. 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 industry.

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 Regulation 6: Regulations governing taught postgraduate programmes of study.

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]

UNIVERSITY OF LEICESTER

Programme Specification (Postgraduate) FOR ENTRY YEAR: 2025/26

Date created: Click or tap here to enter text. **Last amended:** 25/04/2025 **Version no.** 1

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

Academic Year affected	Module	Change
2025/26	EG7018 Embedded Systems for Condition Monitoring and Control	New core module
2025/26	EG7014 High Reliability Embedded Systems	New core module
2025/26	EG7040 Attitude and Orbit Control Systems	Core module removed
2025/26	EG7015 Rotorcraft Mechanics and Control	Optional module removed
2025/26	EG7413 Spacecraft Systems Engineering	Optional module removed

MSc in Advanced Electrical and Electronic Engineering – September Intake

Credit breakdown

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

180 credits in total

Level 7/Year 1 2025/26

Core modules

Delivery period	Code	Title	Credits
Semester 1	EG7010	Engineering Design Case Study	15 credits
Semester 1	EG7034	Advanced Electrical Machines	15 credits
Semester 2	EG7217	Spacecraft Communications	15 credits
Semester 1	EG7227	Artificial Intelligence Architectures	15 credits
Semester 2	EG7324	Signal Processing	15 credits
Semester 2	EG7035	Electronically Controlled Drives	15 credits
Semester 2	EG7018	Embedded Systems for Condition Monitoring and Control	15 credits
Semester 1	EG7014	High Reliability Embedded Systems	15 credits
Term 3	EG7020	Individual 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.

Level 7/Year 2 2026/27 (for students on the with Industry variant)

Core modules

Delivery period	Code	Title	Credits
Choose an item.	EG7020	Individual Project	60 credits
	ADEG7223	On Placement*	

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

MSc in Advanced Electrical and Electronic Engineering – January Intake

Credit breakdown

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

180 credits in total

Level 7/Year 1 2025/26

Core modules

Delivery period	Code	Title	Credits
Semester 2	EG7217	Spacecraft Communications	15 credits
Semester 2	EG7324	Signal Processing	15 credits
Semester 2	EG7035	Electronically Controlled Drives	15 credits
Semester 2	EG7018	Embedded Systems for Condition Monitoring and Control	15 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.

Level 7/Year 2 2026/27

Core modules

Delivery period	Code	Title	Credits
Semester 1	EG7010	Engineering Design Case Study	15 credits
Semester 1	EG7034	Advanced Electrical Machines	15 credits
Semester 1	EG7227	Artificial Intelligence Architectures	15 credits
Semester 1	EG7014	High Reliability Embedded Systems	15 credits
Choose an item.	EG7020	Individual Project	60 credits
	ADEG7223	On Placement*	

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 [log in required]. (Note - modules are organized by year of delivery).