1. **Programme Title(s):**

   MSc/PGDip in Advanced Electrical and Electronic Engineering with Management
   MSc in Advanced Electrical and Electronic Engineering with Management and Industry
   Postgraduate Diploma (PGDip) in Advanced Electrical and Electronic 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	%
100163	75
100089	25

2. **Awarding body or institution:**

   University of Leicester

3. **a)Mode of study**

   MSc/PGDip in Advanced Electrical and Electronic Engineering with Management: Full-time or
   Part- time.

   MSc in Advanced Electrical and Electronic 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 May/June 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/PGDip in Advanced Electrical and Electronic Engineering with Management:
   The normal period of registration is 12 months.
   The maximum period of registration is 33 months.

MSc in Advanced Electrical and Electronic Engineering with Management and Industry:
The normal period of registration is 24 months.
The maximum period of registration is 24 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, 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 focused on industrial careers in the engineering sector. The technical focus of this programme is study of 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 specialise in electrical disciplines 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 electrical and electronic technologies, 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 'with industry' variant only, these additional programme aims apply:
    *   Prepare students for career and training opportunities which relates to their degree – in both the private and public sectors, and voluntary organisations.
    *   Construct effective applications for placement opportunities
    *   Provide students the opportunity to recognise suitable plans for transitioning into the workplace

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:**

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Subject and Professional skills		
Knowledge		
Core knowledge of Electrical and Electronic Engineering, and closely related subjects such as Communications, Signal Processing and Control.

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. | Lectures, Specified reading, Laboratory classes, Design exercises, Tutorials, Group discussion, directed reading and exercises, private study, assignment feedback: formative and summative.

Dissertation research process, research methods training. | Module examinations, Laboratory, design exercise and literature review reports, oral presentations and tutorial performance. Essays (individual), group discussions, computer based exercises, case study exercises. Research proposal, ethics approval and dissertation. |
| **Concepts** | | |

Design of a wide-range of modern Electrical and Electronic Engineering systems. Graduates should be able to explain the core concepts of management as they relate to engineering activities.	Lectures, Practical classes, Tutorials, Group discussion, Directed reading, assignment feedback, private-study. Dissertation supervision process, independent research.	Module examinations, Laboratory, design exercise and literature review reports, oral presentations, tutorial. Essays (individual), group discussions, case study exercises, research proposal and dissertation.
Techniques		
Practical demonstration of experimental methods. 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.	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.	Laboratory and design exercise reports, module design exercise assessment, essays (individual), group discussions, case study exercises, and the dissertation. Module examinations.
Critical analysis		
Critical appraisal of results and literature, the discipline of management and its application in engineering, including in different cultural, environmental and organisational contexts.	Laboratory, design exercise and project supervision	Laboratory, module design exercise and literature review reports. Essays (individual), group discussion, case study exercises. Project progress and dissertation.
Presentation		
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.	Tutorials, Module seminars, Laboratory classes, module design exercise supervision, Project supervision. group discussion, directed reading and exercises. Dissertation.	Module presentations, Laboratory, module design exercise and dissertation. Essays, examinations and case study exercises.
Appraisal of evidence		
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.

Industrial application		
With industry students only: Practical experience of the application of knowledge, concepts and techniques of engineering and management.	Industry placement.	Industry placement and report.

Intended Learning Outcomes	Teaching and Learning Methods *(b) Transferable skills*	How Demonstrated?
Research skills		
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.
Communication skills		
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.
Data presentation		
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
Working relationships		
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.

Managing learning		
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.
Career management		
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.
With industry students only: 1. Select appropriate resources for researching/securing placement opportunities 2. Explain the process for applying for and securing a relevant placement 3. Construct effective applications for placement opportunities 4. Recognise suitable plans for transitioning into a placement 5. Apply the theoretical and practical aspects of the material studied at the University and demonstrate the personal and professional skills necessary for your role within the organisation. 6. Compose a Professional Development Plan considering your strengths, development areas and motivations for your next step 7. Modify your CV to include the skills and experience you have gained through your	Placement preparation 1 & 2: Students are provided with dedicated and timetabled sessions to prepare to search and secure an industrial placement. Problem solving classes, Masterclasses, Career development programmes, Independent research. On placement: Students undertake a minimum of 3 months experience in the workplace. Project supervision, independent research	Formative module feedback through session tasks and exercises Completion of Monthly Reflective Journals to record skills development, major achievements, key areas of work, learning points and challenges overcome. Assessed by a Placement Portfolio, comprising of a Reflective Summary, Professional Development Plan, and Updated CV (excluded from word count) to formally assess on a pass or fail basis.

significant experience gained in the past 12 months.		Formative feedback during a Placement Visit (in person or via Skype) from Placement Provider and Placement Tutor regarding reflection on skills development, areas of strength and weakness and contribution to the workplace.

10. Special features:

Accreditation for the course is being sought from IET and InstMC, if successful this would be subject to 5 yearly re-accreditation.

i. After completing the eight taught modules and exams in the first year of the course, students will carry out between 3 and 12 months employment in an industrial placement. Students will be encouraged to undertake the maximum period of employment possible, to gain the full benefit of experience in industry.

ii. On the return from an industrial placement, the Placement Student will carry out an in-house project in the School or Department, as per the normal non-Industry MSc The project will be supervised and assessed within the Department. The project title will be decided, in conjunction with the Placement Student, while they are on placement.

iii. During the industrial placement, appropriate support will be provided by the School or Department as defined in the Code of Practice.

iv. Placement Students will be expected to complete a Monthly Reflective Journal to record their training. This will support the Placement Student to complete the Placement Portfolio which is assessed on a pass/fail basis, and will have no credit weighting in the MSc.

v. Placement Students who do not pass the assessment or meet the minimum duration of an industrial placement will receive the standard MSc degree.

11. Indications of programme quality:

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

It is the student's responsibility to secure an industrial placement. Students are invited to attended Placement Preparation modules, additional support workshops and 1-2-1 appointments with the Career Development Service. Employer led activities provide a platform for students to engage with organisations who are recruiting students for year in industry roles.

The 'with Industry' MSc relies on the Placement Provider to provide work suitable for an MSc student. To ensure the role is relevant, the School or Department assesses the industrial placement through the University's Placement Approval Process. The Placement Provider will be asked to provider:

- An indication of the area of the organisation where the Placement Student will work.
- An indication of the area of expertise that the Placement Student should have or will gain.

- Whether the work is suitable only for a UK national, for and EU national or for an overseas student.
- The resources available to the Placement Student. For example, design software, textbooks, laboratory equipment, product specimens, access to facilities in the organisation.
- Identification of a suitable industrial mentor (i.e. a graduate with knowledge of the area and at least a couple of years of experience in the field).

When a Placement Student starts an industrial placement, they will be required to complete health and safety documents and confirm they have completed a formal induction process no later than the 2nd week of placement.

Placement Students will be provided with a Study Guide for their industrial placement and support them to complete the assessment. The School or Department will undertake a placement 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.

12.   Scheme of Assessment

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
	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		PGCert in ENGINEERING	PGCert IN ENGINEERING	PGCert IN ENGINEERING

NUMBER OF 15- CREDIT EG7xxx MODULES PASSED		FAIL (30)	WITH MANAGEMENT (45)	WITH MANAGEMENT (60)	WITH MANAGEMENT (75)
	3	PGCert in ADVANCED ENGINEERING (45)	PGCert in ADVANCED ENGINEERING WITH MANAGEMENT (60)	PGCert IN ADVANCED ENGINEERING WITH MANAGEMENT (75)	PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (90)
	4	PGCert in ADVANCED ENGINEERING (60)	PGCert in ADVANCED ENGINEERING WITH MANAGEMENT (75)	PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (90)	MSc/PGDip IN (respective discipline) ENGINEERING WITH MANAGEMENT (105)
	5	PGCert in ADVANCED 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 Regulation 6:](#) Regulations governing taught postgraduate programmes of study.

15. **Additional information** [e.g. timetable for admissions]

    Admissions will only take place in October each year.

16. **External Examiner**

    The details of the External Examiner(s) for this programme and the most recent External Examiners' reports can be found [here](#).

Appendix 1: Programme structure (programme regulations)

YEAR 1

Semester 1

Compulsory modules:

EG7010 Engineering Design Case Study	15	Sem 1
MN7403 Accounting and Finance for Managers	15	Sem 1
MN7402 Business Economics	15	Sem 1
ADEG7221 Placement Preparation 1*	0	Sem 1

Select two modules from:

EG7013 Modelling and Classification of Data	15	Sem 1
EG7014 High Reliability Embedded Systems	15	Sem 1
EG7015 Robust Control	15	Sem 1
EG7021 Radio Systems	15	Sem 1
EG7034 Advanced Electrical Machines	15	Sem 1

Semester 2

Compulsory modules:

MN7406 International Business	15	Sem 2
ADEG7222 Placement Preparation 2*	0	Sem2
EG7302 Engineering Management Project*	60	Sem 2/Summer

Select two modules from:

EG7016 Design of Discrete Systems	15	Sem 2
EG7017 Real-Time Signal Processing	15	Sem 2
EG7022 Digital Communications	15	Sem 2
EG7035 Advanced Electronically Controlled Drives	15	Sem 2
EG7040 Nonlinear Control	15	Sem 2

YEAR 2*

ADEG7223 On Placement*	0
EG7302 Engineering Management Project*	60

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

Appendix 2: Module Specifications

See module specification database http://www.le.ac.uk/sas/courses/documentation