UNIVERSITY OF LEICESTER

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

MSc/PGDip* in Information and Communications Engineering with Industry

 * Exit award only

HECOS Code

HECOS CODE	%
100159	100

2. **Awarding body or institution:**

University of Leicester

3. a) **Mode of study**

Full-time:

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 is off campus, on the site of the Placement Provider.

4. **Registration periods:**

The normal period of registration is 28 months.
The maximum period of registration is 40 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. Applicants for the "with Industry" variant should have or expect to gain at least a very good second class honours BSc degree or qualification of equivalent standard recognised by the University in a relevant subject.

English language
Generally, a score of 6.0 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 is deemed adequate. Courses at the University's English Teaching Unit are offered to candidates who fail this requirement. The course must be complete before the MSc can begin.

6. Accreditation of Prior Learning:

None

7. Programme aims:

The programme aims to introduce and develop the techniques and knowledge relevant to the design of modern integrated communication and information systems. The course covers the design of embedded systems, digital signal processing techniques, methods of digital communication, together with the study of a variety of radio systems.

Students should be able to:

• Demonstrate specific knowledge and understanding of advanced topics in information processing and communications and to be able to apply this knowledge in the design and simulation of real-world systems;
• Describe their role in their company and the company's role in relation to customers and the industrial sector in which it sits;
• Continue to develop their professional engineering education through CPD programmes of related areas;
• Work effectively as part of both multi- and single-disciplinary teams;
• Demonstrate clear communication skills and be competent users of IT communication techniques (e.g. oral presentation and report writing);
• Pursue research (MSc graduates only);

For this 'with industry' variant, 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 radio systems, digital communications, digital signal processing and embedded systems Practical experience of the application of Engineering knowledge to real world scenarios, through the industrial placement.	Lectures, Specified reading, Laboratory classes, Design exercises, Tutorials	Module examinations, Laboratory and design exercise reports, oral presentations
Concepts		
Design of modern radio, digital signal processing, and embedded systems	Lectures, Practical classes, Tutorials	Module examinations, Laboratory and design exercise reports, oral presentations
Techniques		
Practical demonstration of experimental methods, Competent use of a variety of engineering design tools. Practical experience of the application of Engineering techniques to real world scenarios, through the industrial placement.	Laboratory classes, Individual Project supervision, Practical demonstrations, Lectures	Laboratory and design exercise reports, Individual Project progress and report, Module examinations
Critical analysis		
Critical appraisal of results. Critical review of literature	Laboratory, design exercise and project supervision	Laboratory and design exercise reports, Project report
Presentation		
Presentation of scientific results, Participation in scientific discussion	Tutorials, Module seminars, Laboratory classes, Group project supervision, Project	Module presentations, Individual project report

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Appraisal of evidence		
Experimental methods, Project design	Lectures, Laboratory classes, Project supervision	Written examinations, Laboratory and design exercise reports, Project reports
(b) Transferable skills		
Research skills		
Literature review, Experimental design, Laboratory skills, Data analysis	Tutorials, lectures, Laboratory classes, Project supervision meetings	Design project, oral presentations, Coursework, Individual project report
Communication skills		
Report writing, Scientific communication, communication with peers, non-technical managers, technicians etc. Learning how to work and communicate in a modern industrial environment	Industrial experience individual presentations	Laboratory and design reports, Individual project report

Data presentation		
Use of IT and statistics to show general trends in data

Practical experience of the application of Engineering software within modern industry | Project supervision meetings, supervision in laboratory classes | Laboratory reports, Individual project report |
Information technology		
Competent use of a variety of engineering design tools. Able to write code for Matlab and embedded applications	Lectures, Laboratory classes, Project supervision	PC-based examination (EG7012), laboratory reports, Individual project report
Problem solving		
Recognition, diagnosis and solution of engineering issues	Making functioning models and explaining their output in of a variety of engineering design tools.	laboratory reports, design report, Individual project report
Working relationships		
Project management, Working in a company	Industry-based experience, laboratory classes	Project report, Assessment of supervised project work by mentor
Managing learning		
Time management, Organization skills, study skills	Tutorials, Library and IT skills sessions, Directed reading for design project	Laboratory work design project and individual project
Career management		

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 significant experience gained in the past 12 months	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. 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:

The course is accredited by IET and InstMC 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 <u>a maximum of 15 credits</u> 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. 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) All modules are compulsory

January Entry

Semester 2 (January 2021

	Credits
EG7016 Design of Discrete Systems	15
EG7017 Real-Time Signal Processing	15
EG7022 Digital Communications	15
EG7023 Radio Communications	15
ADEG7221 Placement Preparation 1*	0
Semester credits	60

Semester 1 (September 2021)

	Credits
EG7010 Engineering Design Case Study	15
EG7013 Modelling and Classification of Data	15
EG7014 High Reliability Embedded Systems	15
EG7217 Advanced Communications	15
ADEG7222 Placement Preparation 2*	0
Semester credits	60

YEAR 2 (Jan -)
ADEG7223 On Placement
EG7020 Individual Project   60

Total credits 180

* The 'with Industry' programme includes 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.

Appendix 2: Module Specifications
See module specification database http://www.le.ac.uk/sas/courses/documentation