UNIVERSITY OF LEICESTER

Programme Specification (Postgraduate)

Date amended: Jan 2017

1. **Programme Title(s):**
   MRes in Engineering / PGCert* in Engineering
   *Exit award only

2. **Awarding body or institution:**
   University of Leicester

3. **a) Mode of study**

   Full time

   b) Type of study
   Campus-based

4. **Registration periods:**
   The normal period of registration is 1 year.
   The maximum period of registration is 2 years.

5. **Typical entry requirements:**
   Applicants will be required to write a brief statement of research interests, clearly indicating the Engineering discipline in which they intend to do the MRes project. Entry requirement is a first or upper second class honours Engineering degree, or equivalent, broadly aligned to the Engineering discipline selected for the MRes project. For applicants with non-standard first degrees, the programme team will review each case individually to assess the applicants' studies to date and whether they will be sufficiently prepared to undertake a programme of research in the field.

   Where applicants do not currently use English, they will normally, in addition, need to demonstrate that they meet the University's English language proficiency requirements for postgraduate entry. See: http://www2.le.ac.uk/study/english and http://www2.le.ac.uk/study/english/visa
   It is envisaged that this programme will encourage students to pursue a 1+3 route to the full-time PhD.

6. **Accreditation of Prior Learning:**
   No accreditation of prior learning is considered.

7. **Programme aims:**
   The overall aim of the programme is to cover areas of Engineering previously explored at an undergraduate level. First semester modules will cover some advanced core knowledge.
   The individual research project will cover in-depth understanding of a research problem relating to a particular Engineering discipline. The programme exposes the student to both broad knowledge and to an in-depth research investigation. The MRes will develop students who want to progress to a research career. The project component of the MRes allows the student to develop and explore a deep understanding of their topic. In particular, the MRes aims to equip students with the research skills needed for advanced engineering research at doctoral level.

8. **Reference points used to inform the programme specification:**
   - QAA Framework for Higher Education Qualifications in England, Wales and Northern Ireland
   - QAA Master's Degree Characteristics
   - QAA Benchmarking Statement Engineering (2015)
   - QAA Quality Code (B12: Research Degrees – 2012)

- PDR report (May 2008)
- University Learning Strategy
- University Employability Strategy
- Graduate Survey (2014)
- First Destination Survey
- External Examiners' reports

9. Programme Outcomes:

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Subject and Professional skills		
Knowledge		
Core knowledge of the principles of engineering in subjects such as dynamics, advanced control theory, mechanics of materials, radio systems, etc.	Lectures, Tutorials, Seminars, Surgeries, Directed reading, Problem solving classes, Laboratory practical classes, Computer practical classes, Demonstrations, Computer-aided learning, Example sheets	Examinations, Problem-based examinations, Essays, Computer-based exercises, Laboratory reports. Laboratory notebooks
Concepts		
Knowledge, understanding and experience in the application of appropriate engineering theories to solve theoretical problems and to approach practical design cases.	Lectures, Tutorials, Seminars, Surgeries, Directed reading, Problem solving classes, Laboratory practical classes, Computer practical classes, Demonstrations, Computer-aided learning, Project supervision, Example sheets, Independent research.	Examinations, Problem-based examinations, Essays, Computer-based exercises, Laboratory reports, Laboratory notebooks, Individual research project, Written report.
Techniques		
Skills in using experimental and analytical methods, and ability to use of a variety of engineering design tools.	Lectures, Tutorials, Seminars, Surgeries, Directed reading, Laboratory practical classes, Computer practical classes, Demonstrations, Computer-aided learning, Project supervision, Example sheets, Independent research.	Examinations, Problem-based examinations, Essays, Computer-based exercises, Laboratory reports, Laboratory notebooks, Individual research project, Written report.
Critical analysis		
Ability to independently search, interpret, assess use results, in specific engineering disciplines, in order to meet the objectives of the assigned research project. Ability to extend existing knowledge in order to advance towards some set research objectives. (MRes only)	Project supervision, Independent research.	Individual research project, Written report.
Presentation		
Ability to present existing and new results, ability to present and interpret data in various forms for a range of audiences, ability to explain own contribution with respect to existing state of the art in the specific Engineering discipline chosen for the research project.	Tutorials, Seminars, Directed reading, Problem solving classes, Project supervision, Independent research.	Project presentation, Contributions to seminars

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Appraisal of evidence		
Initiative in pursuing research goals, ability to evaluate existing and proposed results. (MRes only)	Project supervision, Independent research.	Individual research project, Written report.
(b) Transferable skills		
Research skills		
Ability to independently search, interpret, assess use results. Ability to present existing and new results, ability to present and interpret data in various forms for a range of audiences, ability to explain own contribution with respect to existing state of the art. (MRes only)	Project supervision, Independent research, Tutorials, Seminars	Individual research project, Written report, Project presentation, Contributions to seminars
Communication skills		
Ability to write competently in an appropriate academic style with correct referencing and organisation of content; Ability to give a professional oral presentation. (MRes only)	Project supervision, Independent research.	Individual research project, Written report, Project presentation, Contributions to seminars
Data presentation		
Ability to use IT tools to show general trends in data. Ability to give a competent oral presentation on findings before an informed professional academic audience and peers. (MRes only)	Project supervision, Independent research, Tutorials, Seminars	Individual research project, Written report, Project presentation, Contributions to seminars
Working relationships		
Ability to work in a group in a laboratory class. Ability to relate with an academic supervisor. Ability to pursue independent research. (MRes only)	Group work in modules, Project supervision, Independent research	Laboratory reports, Laboratory notebooks, Individual research project, Written report.
Managing learning		
Ability to work independently and manage own time. Ability to organise balanced amounts of time for studying existing material and pursuing independent ideas. (MRes only)	Project supervision, Independent research, Tutorials, Seminars	Individual research project, Written report, Project presentation, Contributions to seminars, Regular contact with project supervisor, Development of project time table
	Career management	
Ability to apply the skills and knowledge gained to their own professional contexts	Career development programmes. Induction programmes	Student evaluation of the course, and students' reflections on their own personal and professional development individually

10. Special features:

The programme is designed for those international students who have funding for 4 years and would benefit from a preparatory year before progressing to PhD in order to develop a research interest and independent study skills. The MRes is, however, a freestanding qualification and admissions are not limited to this group of students. This course has been accredited by IMechE for 5 years from the 2014 intake.

11. Indications of programme quality:

This course builds on the existing MSc programmes run in the Department all of which have received excellent reports from our external examiners.

12. Scheme of Assessment

This programme follows the Scheme of Assessment for MRes degree programmes. See: Senate Regulation 6 governing taught postgraduate programmes http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes

13. Progression points

The taught component of the programme is fully contained in the first semester. Progression to the project is granted at the end of the taught component according to the rules of progression for MRes degree programmes. Students who fail to progress to the MRes project or fail the MRes project will be considered for a PGC in Engineering based on the taught component of the programme. See: Senate Regulation 6 governing taught postgraduate programmes http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes

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

Re-assessment rules for taught postgraduate programmes apply. See: Senate Regulations 6 governing taught postgraduate programmes http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes

15. Additional information

Students will be provided with the same level of support as our current MSc students and will have recourse to a programme director, their own personal tutor and their project supervisor throughout the duration of their studies. Students who fail the MRes project will be considered for a PGC in Engineering based on the taught component of the programme.

16. External Examiners

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)

Students will have to indicate, at the time of application, the general area in which they intend to do the MRes project. The following research areas are available: Bioengineering, Control, Electrical Engineering, Embedded Systems and Communications, Mechanics of Materials, Thermofluids.

In the taught part of the course, students will take four 15-credit taught modules.
Core modules will be: ED7030: Professional Skills for the Researcher offered by the Leicester Learning Institute (LLI); and EG 7012: MATLAB and CAD. Optional modules will be chosen among MSc modules offered in the first semester. The choice of the optional modules will match the selected research area. This aspect will be illustrated at the Induction Day, and students will be guided, accordingly, in the choice of the optional modules.

The following table illustrates the structure of the MRes and is based on the modules offered by Engineering.

	Credits	**Dates**
Compulsory Modules:		
Induction	0	Week 1
EG7083: Professional Skills for the Researcher	15	Semester 1
EG7012: MATLAB and CAD	15	Semester 1
EG7070 MRes Project	120	Semester 2/Summer
Select two modules from:		
EG7013: Modelling and Classification of Data	15	Semester 1
EG7014: High Reliability Embedded Systems	15	Semester 1
EG7015: Robust Control	15	Semester 1
EG7021: Radio Systems	15	Semester 1
EG7026: Advanced Fluid Dynamics	15	Semester 1
EG7028: Understanding Surfaces in	15	Semester 1
EG7034: Advanced Electrical Machines	15	Semester 1
EG7037: Advanced Solid Mechanics	15	Semester 1

The MRes project will run over the second semester and the summer, starting in February, and finishing at the end of September.

Students will be given a list of projects halfway through the autumn term, and will choose a project at the end of the autumn term, ready to start work immediately after the first semester exams.

Students will be expected to attend supervision meetings, and to keep records of these meetings. In addition, the following formal milestones, for monitoring and assessment of progress, will be in place:

- Formal proposal and literature review: assessed at the end of February by the supervisor, practical work to start after this has been marked and accepted. (This also ties in with the progression requirement for MRes students since first semester marks will be known at this stage; the project will be stopped at this stage if progression requirements are not met.)

- Presentation and interim report: assessed at the start of the summer term by the supervisor and examiner. The presentation and interim report should give a summary of the work done so far, and plans for the rest of the project. Feedback will be given on the quality of academic writing.

- Final dissertation: assessed at the end of August by the supervisor and examiner. A draft dissertation should be submitted to the supervisor at the start of August for comment, and feedback given in time for corrections to be made.

- Viva: assessed in mid-September by the supervisor and examiner, based on the content of the final dissertation.

Appendix 2: Module Specifications

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