1. **Programme Title(s):** MSc/PGDip*/PGCert* in Embedded Systems and Control  
   * Exit Awards only

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

3. **a) Mode of study**  
   Full time or part-time

   **b) Type of study**  
   Campus-based

4. **Registration periods:**  
   The normal period of registration is 1 year full-time, and 2 years for part-time students.  
   The maximum period of registration is 2 years full-time, and 4 years for part-time students.

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.  
   Candidates whose first language is not English will be required to provide evidence of appropriate language skills.

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

7. **Programme aims:**  
   This course will provide the knowledge and skills required of a professional engineer to design Embedded Systems for use in Control, Diagnostics, Monitoring and Communications.

8. **Reference points used to inform the programme specification:**
   - [The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (Qualifications Frameworks)](external)
   - QAA [Master’s Degree Characteristics](external)
   - QAA Benchmarking Statement [Engineering (2015)](external)
   - PDR report (May 2008)
   - [University Learning Strategy](external)
   - University Employability Strategy
   - Graduate Survey (2014)
   - First Destination Survey
   - External Examiner’s Reports
## 9. Programme Outcomes:

<table>
<thead>
<tr>
<th>Intended Learning Outcomes</th>
<th>Teaching and Learning Methods</th>
<th>How Demonstrated?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(a) Subject and Professional skills</strong></td>
<td></td>
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<tr>
<td>Knowledge</td>
<td></td>
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<tr>
<td>State-of-the-art knowledge in the area of control, digital signal processing and software design</td>
<td>Lectures, Specified reading, Laboratory classes, Design exercises, Tutorials</td>
<td>Module examinations, Laboratory, design exercise and literature review reports, oral presentations, tutorial performance</td>
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<tr>
<td>Concepts</td>
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<tr>
<td>Linear and nonlinear robust control paradigms, software engineering and C++ applied to real-time-systems, digital signal processing and hardware interfacing.</td>
<td>Lectures, Practical classes, Tutorials</td>
<td>Module examinations, Laboratory, design exercise and literature review reports, oral presentations, tutorial performance</td>
</tr>
<tr>
<td>Techniques</td>
<td></td>
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<tr>
<td>State-of-the-art design and simulation software for control system design and off-line signal processing, and scheduling for real-time implementation</td>
<td>Laboratory classes, Individual Project and module design exercise supervision, Practical demonstrations, Lectures</td>
<td>Laboratory and design exercise reports, module design exercise assessment, Individual Project progress and report, Module examinations</td>
</tr>
<tr>
<td>Critical analysis</td>
<td></td>
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<tr>
<td>Critical appraisal of results. Critical review of literature</td>
<td>Laboratory, design exercise and project supervision</td>
<td>Laboratory, module design exercise and literature review reports, Project progress and report</td>
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<tr>
<td>Presentation</td>
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<tr>
<td>Presentation of scientific results, Participation in scientific discussion</td>
<td>Tutorials, Module seminars, Laboratory classes, module design exercise supervision, Project supervision</td>
<td>Module presentations, Laboratory, module design exercise and Individual project report</td>
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<tr>
<td>Appraisal of evidence</td>
<td></td>
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<tr>
<td>Experimental methods, Project design</td>
<td>Lectures, Laboratory classes, Project supervision</td>
<td>Written examinations, laboratory and design exercise reports, Project reports</td>
</tr>
<tr>
<td><strong>(b) Transferable skills</strong></td>
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<tr>
<td>Research skills</td>
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<tr>
<td>Literature review, Experimental design, Laboratory skills, Data analysis</td>
<td>Tutorials, lectures, Laboratory classes, module design exercise work, Project supervision meetings</td>
<td>Module design exercise reports and oral presentations, Course work, Individual project report</td>
</tr>
<tr>
<td>Communication skills</td>
<td></td>
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<tr>
<td>Report writing, Scientific Communication</td>
<td>Project supervision meetings, laboratory and design exercise classes, Tutorials</td>
<td>Laboratory, design exercise and literature review reports, Individual project report</td>
</tr>
<tr>
<td>Data presentation</td>
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<tr>
<td>IT, Analytical and graphical methods, CAD drawings, Statistics</td>
<td>Project supervision meetings, course work (laboratories, module design exercises)</td>
<td>Seminars, Course work reports, Project reports, Module examinations</td>
</tr>
<tr>
<td>Working relationships</td>
<td></td>
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<tr>
<td>Project management, Organization skills, Time management, Working in groups</td>
<td>Project supervision meetings, Group working in modules (laboratories and design exercises)</td>
<td>Module design exercise assessment, Seminar performance</td>
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<tr>
<td>Managing learning</td>
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<tr>
<td>---------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Study skills, Information management, Developing specialization and interests, Project management</td>
<td>Tutorials and seminars, Library and IT skills sessions, project supervision meetings</td>
<td>Course work, module design exercise assessment, project assessment</td>
</tr>
</tbody>
</table>

10. **Special features:**
   This course has been accredited by IET and InstMC for 5 years from the 2014 intake;

11. **Indications of programme quality:**
   The existing MSc programmes run in the Department have constantly received excellent reports from the external examiners.

12. **Scheme of Assessment**
   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.

   See: Senate Regulation 6 governing taught postgraduate programmes
   [http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes](http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes)

13. **Progression points**
   Students who fail to progress to the MSc in Embedded Systems and Control project or fail the MSc in Embedded Systems and Control Project will be considered for an interim award 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](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 Regulation 6 governing taught postgraduate programmes
   [http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes](http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes)

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

16 **External Examiners**

   The details of the External Examiner(s) for this programme and the most recent External Examiners’ reports can be found [here](http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes).
### Appendix 1: Programme structure (programme regulations)

**Semester 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Dates</th>
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<tbody>
<tr>
<td>Induction</td>
<td>0</td>
<td>Week 1 / Semester 1</td>
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<tr>
<td>EG7012 MATLAB and CAD</td>
<td>15</td>
<td>Semester 1</td>
</tr>
<tr>
<td>EG7014 High Reliability Embedded Systems</td>
<td>15</td>
<td>Semester 1</td>
</tr>
<tr>
<td>EG7015 Robust Control</td>
<td>15</td>
<td>Semester 1</td>
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<tr>
<td>Select one from:</td>
<td></td>
<td></td>
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<tr>
<td>EG7412 Systems Engineering and Spacecraft Systems</td>
<td>15</td>
<td>Semester 1</td>
</tr>
<tr>
<td>EG7013 Modelling and Classification of Data</td>
<td>15</td>
<td>Semester 1</td>
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</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Dates</th>
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<tbody>
<tr>
<td>EG7016 Design of Discrete Systems</td>
<td>15</td>
<td>Semester 2</td>
</tr>
<tr>
<td>EG7017 Real-Time Signal Processing</td>
<td>15</td>
<td>Semester 2</td>
</tr>
<tr>
<td>EG7018 Embedded Systems for Condition Monitoring and Control</td>
<td>15</td>
<td>Semester 2</td>
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<tr>
<td>EG7040 Nonlinear Control</td>
<td>15</td>
<td>Semester 2</td>
</tr>
<tr>
<td>EG7020 Individual Project</td>
<td>60</td>
<td>Semester 2 / Summer</td>
</tr>
</tbody>
</table>

**Appendix 2: Module Specifications**

See module specification database [http://www.le.ac.uk/sas/courses/documentation](http://www.le.ac.uk/sas/courses/documentation)