# Postgraduate Programme Specification
# MSc Electrical and Electronic Engineering

This specification provides a summary of the main features of the programme and learning outcomes that a student might reasonably be expected to achieve and demonstrate where full advantage is taken of all learning opportunities offered. Further details on the learning, teaching and assessment approach for the programme and modules can be accessed on the University website and Virtual Learning Environment, GCU Learn. All programmes of the University are subject to the University's Quality Assurance processes.

## 1. GENERAL INFORMATION

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|---|---|
| **Programme Title** | **MSc Electrical and Electronic Engineering** |
| **Final Award** | MSc Electrical and Electronic Engineering |
| **Awarding Body** | Glasgow Caledonian University |
| **School** | School of Computing, Engineering and Built Environment |
| **Department** | Department of Electrical and Electronic Engineering |
| **Mode of Study** | Full-time <br> Part-time |
| **Location of Delivery** | Glasgow Campus |
| **UCAS Code** | N/A |
| **Accreditations (PSRB)** | The Institution of Engineering and Technology (IET) |
| **Period of Approval** | From: September 2021    To: August 2026 |

## 2. EDUCATIONAL AIMS OF PROGRAMME

*The programme aims to enable graduates to qualify for entry into the profession of electrical and electronic engineering with a bias towards energy engineering and renewable technologies. In addition to the knowledge and understanding of electrical and electronic engineering there will be an integrated understanding of power systems, instrumentation systems, telecommunications systems and technologies, and business, reinforced with personal and inter-personal skills. The programme aims to prepare students for the next stage in their careers, whether entering employment or to enable those undertaking the programme to contribute towards research within the discipline. It also aims to provide continuing professional development opportunities related to the electrical and electronic professions or employment settings.*

*The general educational aims of the programme are that students should:*

- *Be provided with the knowledge and skills to equip them for a career in industry, taking up a wide range of employment opportunities within a wide range of specialisations from power electronics to measurement systems and telecommunications;*
- *Develop skills and knowledge, to understand and analyse technical solutions in different areas of energy production and use;*
- *Develop critical, analytical problem-based learning skills and the transferable skills to prepare them for employment in industry;*
- *Develop skills in information seeking and retrieval, and in critical assessment of received data;*
- *Gain the skills to adapt and respond positively to new developments and change;*
- *Enhance the development of their communication and other skills required for employment;*
- *Receive a learning experience that promotes and encourages a culture of lifelong learning, further study and continuing professional development.*

*The additional aim of the MSc Project component of the programme is to expand the student's expertise by providing the opportunity to undertake a significant piece of independent within a suitable electrical and electronic engineering topic.*

## 3. LEARNING OUTCOMES

The programme learning outcomes are derived from the following sources:
- The Educational Aims of the Programme.
- QAA Engineering Benchmark Statements (Oct 2019).
- Scottish Credit and Qualifications Framework.
- Engineering Council UK Standard for Professional Engineering Competence (UK-SPEC).

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:

**A: Knowledge and understanding**;
A1    Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study.
A2    Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed.

**B: Practice: Applied knowledge, skills and understanding**;
B1    Apply an integrated or systems approach to the solution of complex problems.
B2    Use practical laboratory and workshop skills to investigate complex problems.
B3    Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations.
B4    Discuss the role of quality management systems and continuous improvement in the context of complex problems.
B5    Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights.

**C: Generic cognitive skills**;
C1    Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.
C2    Select and evaluate technical literature and other sources of information to address complex problems.
C3    Design solutions for complex problems that 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.

**D: Communication, numeracy and ICT skills**
D1    Communicate effectively on complex engineering matters with technical and non-technical audiences.
D2    Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities.

**E: Autonomy, accountability and working with others.**
E1    Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts
E2    Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct

| E3 | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity |
| E4 | Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion |
| E5 | Function effectively as an individual, and as a member or leader of a team |
| E6 | Plan and record self-learning and development as the foundation for lifelong learning/CPD. |

## 4. LEARNING AND TEACHING METHODS

The programme provides a variety of learning and teaching methods. Programme and Module specific guidance will provide detail of the learning and teaching methods specific to each module.

Across the programme the learning and teaching methods and approaches may include the following:
- Lectures
- Seminars
- Practical classes
- Placements
- Simulation experiences
- Groupwork
- Flipped classroom approaches
- Online learning

The above approaches may be delivered either in person or online as appropriate and determined at module level by the Module Leader.

## 5. ASSESSMENT METHODS

The programme provides a variety of formative and summative assessment methods. Programme and Module specific guidance will provide detail of the assessment methods specific to each module.

Across the programme the assessment methods may include the following:
- Written coursework (essays, reports, case studies, dissertation, literature review)
- Oral coursework (presentations, structured conversations)
- Practical Assessment (Placement, VIVA, Laboratory work)
- Group work
- Blogs and Wikis
- Portfolio Presentations
- Formal Examinations and Class Tests

The above assessments may be delivered either in person and online as appropriate and determined at module level by the Module Leader.

## 6. ENTRY REQUIREMENTS

Specific entry requirements for this programme can be found on the prospectus and study pages on the GCU website at this location: www.gcu.ac.uk/study

The Course webpage specific to this Programme is: [MSc Electrical and Electronic Engineering](MSc Electrical and Electronic Engineering)

All students entering the programme are required to adhere to the [GCU Code of Student Conduct](GCU Code of Student Conduct).

## 7. PROGRAMME STRUCTURE AND AVAILABLE AND FINAL EXIT AWARDS[1]

The following modules are delivered as part of this programme:

| Module Code | Module Title | Core or Optional | SCQF Level | Credit Size | Coursework % | Examination % | Practical % |
|---|---|---|---|---|---|---|---|
| MMH624493 | Power System Operation and Protection | Core | M | 15 | 40 | 60 | |
| MMH626242 | Advanced Telecommunications | Core | M | 15 | 50 | 50 | |
| MMH126808 | Data Capture | Core | M | 15 | 50 | 50 | |
| MMH626878 | Measurement Systems | Core | M | 15 | 100 | | |
| MMH323674 | Professional Practice | Core | M | 15 | 100 | | |
| MMH223558 | Energy Audit and Energy Asset Management | Core | M | 15 | 100 | | |
| MMJ921238 | Renewable Energy Technologies | Core | M | 15 | 50 | 50 | |
| MMH623670 | Condition Monitoring | Core | M | 15 | 50 | 50 | |
| | | | | | | | |
| MMH621937 | Project | | M | 60 | C | 100 | |

Students undertaking the programme on a full-time basis commencing in September of each year will undertake the modules in the order presented above.  This may be subject to variation for students commencing the programme at other times of year (e.g. January) and/or undertaking the programme on a part-time or distance learning mode of delivery.

The following final and early Exit Awards are available from this programme[2]:


**Postgraduate Certificate (un-named)** - *achieved upon successful completion of 60 credits (excluding the Dissertation / Project Module)*


**Postgraduate Certificate in Electrical and Electronic Engineering** - *achieved upon successful completion of **60** credits which must include the modules asterisked above*


**Postgraduate Diploma in Electrical and Electronic Engineering -** *achieved upon successful completion of **120** credits which must include the modules asterisked above*


**Master of Science in Electrical and Electronic Engineering** - *achieved upon successful completion of **180** credits which must include the modules asterisked above*

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[1] Periodically, programmes and modules may be subject to change or cancellation.  Further information on this can be found on the GCU website here:
www.gcu.ac.uk/currentstudents/essentials/policiesandprocedures/changesandcancellationtoprogrammes

[2] Please refer to the GCU Qualifications Framework for the minimum credits required for each level of award and the Programme Handbook for requirements on any specified or prohibited module combinations for each award.

| 8. ASSESSMENT REGULATIONS |
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| Students should expect to complete their programme of study under the GCU Assessment Regulations that were in place at the commencement of their studies on that programme, unless proposed changes to University Regulations are advantageous to students.  These can be found at: www.gcu.ac.uk/aboutgcu/supportservices/qualityassuranceandenhancement/regulationsandpolicies |


| VERSION CONTROL (to be completed in line with AQPP processes) | | | |
|---|---|---|---|
| **Any changes to the PSP must be recorded below by the programme team to ensure accuracy of the programme of study being offered.** | | | |
| *Version Number* | *Changes/Updates* | *Date Changes/Updates made* | *Date Effective From* |
| 1.0 | PSP data copied to new template | November 24 | November 2024 |
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