Undergraduate Programme Specification
BEng (Hons)/MEng Electrical Power 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.

GENERAL INFORMATION				
Programme Title	BEng (Hons)/MEng Electrical Power Engineering			
Final Award	BEng (Hons) Electrical Power Engineering MEng Electrical Power 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 Part-time			
Location of Delivery	Glasgow Campus			
UCAS Code	H630 (BEng) H631 (MEng) H732 (GCU Pathways)			
Accreditations (PSRB)	The Institution of Engineering and Technology (IET)			
Period of Approval	From:	September 2021	To:	August 2027

EDUCATIONAL AIMS OF PROGRAMME
The aim of the BEng and MEng Electrical Power Engineering programme is to develop well rounded graduate engineering professionals with a bias toward electrical power engineering, who have the required knowledge and understanding of specific electrical power engineering principles, integrated with an understanding of general engineering, manufacturing and business, reinforced with good personal, inter-personal and teamworking skills, to enable them to perform effectively in any appropriate situation and also having a keen sense of personal, professional, social and environmental responsibility The BEng programme outcomes correspond with the engineer as technical specialist (supporting the need for technology "innovators") with technical expertise enhanced in selected niche areas. A BEng(Hons) exit award from an institution accredited by the IET (Institute of Engineering and Technology) provides partial fulfillment of the competence and commitment required for the registration of Chartered Engineers (CEng). The MEng exit award fully provides the educational requirements for CEng registration. There is an expectation that MEng students will be fully equipped to exercise leadership, initiative, personal responsibility and decision making in complex and unpredictable situations. The programme aims to: • create in the student an ability to think clearly and logically. • equip the student with a range of analytical methods for use in engineering applications. provide such principles and practice as will allow the student to acquire an understanding of engineering to cope adequately with technological change.

- develop the students' ability to contribute to the specification, design, testing, commissioning, modification, manufacture and maintenance of engineering artefacts and systems.
- develop fully the student's abilities in the use of computer aided engineering and relevant aspects of information technology.
- make the student aware of the ethics, social, economic, and environmental impact of engineering.
- extend, enhance and improve the judgement of the student in decision making by extension of analytical, creative and intellectual skills.
- integrate the expertise of staff gained from research, consultancy and scholarly activity into the programme materials where appropriate.
- develop the students' interpersonal skills to enable effective communication and team working
- provide a broad education by an integrated study of vocational and academic disciplines.

BEng(Honours) Graduates will gain the following specialist knowledge, abilities and skills.

- A knowledge of the range and use of analytical methods available for the design, specification, and monitoring of electrical plant and systems.
- The ability to analyse and evaluate the performance and operational characteristics of a range of electrical plant systems and subsystems.
- A strong theoretical understanding in electrical plant, enabling the student to respond positively to technological development and innovation.
- Ability to utilise modern advanced computer-aided design, simulation and analysis techniques in the solution of engineering problems in an electrical plant environment.
- An awareness and appreciation of the practical issues involved in the design, specification, maintenance, commissioning and manufacture of electrical plant and associated systems.
- An awareness of the social, regulatory and environmental impact of engineering solutions to the production, distribution, conversion and utilisation of electrical energy.
- Knowledge of the latest developments in the subject area through the inclusion of research material where appropriate based on staff research, consultancy and other scholarly activity.

MEng Graduates will have in addition to the BEng:

- the ability to integrate their knowledge and understanding of mathematics, science, computer-based methods, design, the economic, social and environmental context, and engineering practice to solve a substantial range of engineering problems, some of a complex nature.
- acquired much of this ability through involvement in individual and group projects, and greater degree of industrial involvement than those in Bachelor's degree programmes.

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 (these outcomes are then mapped to AHEP_4 Learning Outcomes as required by the UK-SPEC– See Appendix III):

3A 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.

3B 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.

3C 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.

3D Communication, numeracy and ICT skills

D1 Communicate effectively on complex engineering matters with technical and nontechnical audiences.

D2 Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities.

3E 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.

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.

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.

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

All students entering the programme are required to adhere to the GCU Code of Student Conduct.

7.	8. **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	FT/PT	SCQF Level	Credit Size	Coursework %	Examination %
M1H326673	Mathematics 1	Core	FT only	7	20	50	50
M1H626685	IoT Systems 1	Core	FT only	7	20	50/50	
M1H326689	Engineering Science	Core	FT only	7	20	50/50	
M1H626678	Engineering for Society	Core	FT only	7	20	100	
M1H626680	Electrical Principles	Core	FT only	7	20	100	
M1H326677	Mechanical Principles	Core	FT only	7	20	100	
M1H323563	Engineering Mathematics	Core	PT only	7	10	30	70
M2H326684	Mathematics 2	Core	FT and PT	8	20	50	50
M2H623525	Analogue and Digital Electronics	Core	FT and PT	8	20	50	50
M2H823551	Energy Resources, Generation and Utilisation	Core	FT and PT	8	20	30	70
M2H630297	Electrical Distribution Systems AB	Core	FT only	8	20	50	50
M2H624585	Electrical Distribution Systems	Core	PT only	8	10	50	50
M2H622325	Control and Instrumentation Systems	Core	FT and PT	8	20	30	70
M2H630266	IOT Systems 2	Core	FT and PT	8	20	50/50	
M3H630987	Control Engineering 3	Core	FT and PT	9	20	100	
M3H623070	Power Electronic Systems 3	Core	FT and PT	9	20	30	70
M3H625943	Electrical Machines	Core	FT and PT	9	20	30	70
M3H623554	Integrated Engineering Studies 3 (IES3)	Core	FT and PT	9	20	100	
M3H623538	Modelling and Data Analysis	Core	FT and PT	9	20	25/25	50
M3H723623	Engineering Operations Management	Core	FT and PT	9	20	30	70
M3H721925	Industrial Practice	Optional	FT only	9	60	30/70	
M3H623747	European Project Semester	Optional	FT only	9	60	10/60/30	
M3H323616	European Exchange Placement	Optional	FT only	9	60	70/30	
MHH630296	EEE Honours Research Project	Core	FT and PT	10	40	70/30	
MHH626773	Renewable Power Integration	Core	FT and PT	10	20	30	70

MHH630298	Power System Analysis	Core	FT and PT	10	20	30	70
MHH625270	HV Technologies and Condition Assessment	Core	FT and PT	10	20	30	70
MHH622747	Control Engineering 4	Optional	FT and PT	10	20	30	70
MHH630295	Power System Protection and Automation	Optional	FT and PT	10	20	30	70
MMH723842	MEng Group Project	Core	FT only	11	45	15/15/50/20	
MMH623585	Power Electronics and Drive Systems	Core	FT only	11	15	50/50	
MMH323674	Professional Practice (Engineering)	Core	FT only	11	15	50/50	
MMH223558	Energy Audit and Energy Asset Management	Core	FT only	11	15	50/50	
MMH624490	Advanced AC and DC Transmission Systems	Core	FT only	11	15	50/50	
MMH623670	Condition Monitoring	Core	FT only	11	15	50	50

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[1]:

Certificate of Higher Education in Engineering- *achieved upon successful completion of 120 credits (this applies for FT students only)*

Diploma of Higher Education in Engineering- *achieved upon successful completion of 240 credits*

Bachelor of Engineering in Electrical Power Engineering- *achieved upon successful completion of 360 credits*

Bachelor of Engineering with Honours in Electrical Power Engineering- *achieved upon successful completion of 480 credits*

Masters of Engineering in Electrical Power Engineering- *achieved upon successful completion of 600 credits (this applies for FT students only)*

[1] 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.

ASSESSMENT REGULATIONS
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: https://www.gcu.ac.uk/aboutgcu/services-and-facilities/qualityassuranceandenhancement/regulations-and-policies In addition to the GCU Assessment Regulations noted above, this programme is subject to Programme Specific Regulations in line with the following approved Exceptions: Case No: 215 Details: A maximum of 30 credits in a Bachelors degree programme can be compensated.

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*
0.0	NA	-	-
1.0	• Module code change – Control Engineering 3 (CE3). New module code is M3H630987 • Added Appendix III – AHEP4 Module Mapping	19/06/2026	Sept 2026