

Abridged PDP – EEE (P02866/P02868)

1. GENERAL INFORMATION

1. **Programme Title:** **BEng(Hons)/MEng**
Electrical and Electronic Engineering
Electrical and Electronic Engineering (Sandwich)
2. **Exit Awards:** CertHE & DipHE Electronic Technologies
BEng (Unclassified) Electrical and Electronic Engineering
BEng (Unclassified) Electrical and Electronic Engineering (Sandwich)
BEng (Hons) Electrical and Electronic Engineering
BEng (Hons) Electrical and Electronic Engineering (Sandwich)
MEng Electrical and Electronic Engineering
MEng Electrical and Electronic Engineering (Sandwich)
3. **Awarding Body:** Glasgow Caledonian University
4. **Approval Date:** June 2020
5. **Faculty/School:** School of Computing, Engineering and Built Environment
6. **Host Department:** Electrical and Electronic Engineering
7. **UCAS Code:** **H610 (BEng)**
H611 (MEng)
H632 (GCU Pathways)
8. **PSB Involvement:** The Institution of Engineering and Technology (IET)
9. **Place of Delivery:** GCU
10. **Subject Benchmark Statements:** EC^{UK} UK_SPEC
11. **Dates of PS Preparation/Revision:** June 2020

2. EDUCATIONAL AIMS OF THE PROGRAMME

2.1 Programme Background and Philosophy

The BEng/MEng Electrical and Electronic Engineering (EEE) programme collects together into a single programme a set of programmes originally validated in May 2010 within a suite called *Product Design Engineering for Electronic Technologies (PDEET)*. The Academic Policy Committee approved the name change (originally Computer and Electronic Systems Engineering - CESE) and the move to a single BEng on 5 December 2012. Permission was also sought (and granted) from the IET accrediting body to allow the existing three-year accreditation of the PDEET suite (in partial fulfillment of the educational requirements for CEng registration) to be moved to the new programme title.

The **original** PDEET BEng programmes were:

BEng/BEng (Hons) Digital Systems Engineering

BEng/BEng (Hons) Network & Communications Engineering

BEng/BEng (Hons) Robotic & Mechatronic Systems Engineering

BEng/BEng (Hons) Instrumentation Systems Engineering

The specialisms within the original separate PDEET named degree programmes were reflected in the renamed programme to Computer and Electronic Systems Engineering as explicit *routes* that appeared on the students' degree transcripts:

BEng Computer and Electronic Systems Engineering (Digital Systems)

BEng Computer and Electronic Systems Engineering (Communications Systems)

BEng Computer and Electronic Systems Engineering (Robotics and Mechatronics)

These programmes were later on renamed as MEng/BEng Electrical and Electronic Engineering (EEE) and subsequently reaccredited in 2015 and 2019 by the IET. Here, students may choose from a set of optional modules according to a preferred area of study. Options are only available if the cohort taking the option is viable.

The aim of the BEng and MEng EEE programmes is to develop well rounded graduate engineering professionals with:

- Defining (technical) skills grounded in the design and development of electronic products and systems.
- Strong enabling (soft and business related) skills.
- 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 is designed to encourage student creative thinking, to develop design visualization skills, expand knowledge, confidence and professional values, so that students can move into a successful career in innovative product design where electronics is the key.

2.2 General Aims of the Programme

The programme aims to:

- provide a broad education by an integrated study of vocational and academic disciplines.
- provide students the benefits of a common first two years. A first year provides opportunities to explore specialist options within the general theme of Electrical and Electronic Engineering as well as those that are core to their understanding of an engineering discipline.
- provide experience of, and the opportunity to transfer to a range of specialist areas.
- create in the student an ability to think clearly, rationally, logically, and in a pragmatic manner and to be able to exercise responsibility.
- equip the student with a range of analytical methods for use in engineering applications and product design within the electronic engineering specialism.
- provide such principles and practice as will allow the student to acquire an understanding of engineering practices to cope adequately with current and emerging technologies within the electronic engineering specialism
- develop the students' ability to contribute to the specification, design, testing, commissioning, modification, manufacture, maintenance and de-commissioning of engineering systems, products and processes.
- develop fully the student's abilities in the use of computer technologies, computer aided engineering tools and relevant aspects of information technology.
- to extend, enhance and improve the judgement of the student in decision making by extension of analytical, creative and intellectual skills.
- equip the student with problem solving strategies to enable the application of knowledge in a flexible manner.
- provide significant exposure to team based projects and problem based learning, and opportunities to develop the students' interpersonal and key soft skills.
- make the student aware of the social impact of engineering including ethical and environmental consequences and considerations.
- integrate the expertise of staff gained from research, consultancy and scholarly activity into the programme delivery as appropriate.
- sustain existing, and seek further industrial partnerships that provide access to design-oriented case studies and projects, work experience and real world problems.
- emphasise market and business realities.

4. PROGRAMME STRUCTURES AND REQUIREMENTS, LEVELS, MODULES, CREDITS AND AWARDS

4.1 Full-Time and Sandwich Programme Curriculum

EEE Level 1			
Module Code	Module Title	Trimester	Credits
M1H323910	Mathematics 1A	A	10
M1H321924	Mechanical Principles A	A	10
M1H623526	Electrical Principles and Circuit Theory	A	20
M1H324194	Engineering Applications	A/B	20
M1H623547	Principles of Programmable Systems A	A	10
M1H623617	Integrated Engineering Studies 1	B	20
M1H323565	Mathematics 1B	B	10
M1H121922	Engineering Materials	B	10
M1H623548	Principles of Programmable Systems B	B	10
Exit Award – Certificate of Higher Education (CertHE) in Electronic Technologies			120

EEE Level 2			
Module Code	Module Title	Trimester	Credits
M2H323566	Mathematics 2A	A	10
M2G620493	Software Development for Engineers	A	20
M2H623525	Analogue and Digital Electronics	A	20
M2H623625	Integrated Engineering Studies 2	A	10
M2H323567	Mathematics 2B	B	10
M2H624585	Electrical Distribution Systems	B	10
M2H623629	Digital and Programmable Systems 1	B	20
Optional modules ³ (choose 1 from):			
M2H622325	Control and Instrumentation Systems	B	20
M2H020497	Signals and Electronic Systems	B	20
Exit Award – Diploma of Higher Education (DipHE) in Electronic Technologies			240

EEE Level 3			
Module Code	Module Title	Trimester	Credits
M3H623544	Digital and Programmable Systems 2	A	20
M3H623517	Communications Engineering	A	20
M3H623554	Integrated Engineering Studies 3	B	20
M3H723623	Engineering Operations and Management	B	20
Optional modules - Trimester A ³ (choose 1 from):			
M3H620587	Signals and Electronic Systems Design	A	20
M3H606414	Control Engineering 3	A	20
Optional modules - Trimester B ³ (choose 1 from):			
M3H623538	Modelling and Data Analysis	B	20
M2H721926	Engineering Design and Analysis 2	B	20
M3H323616	European Exchange Placement ¹ (optional)	B	60
Exit Award – BEng (unclassified) Electrical and Electronic Engineering			360

Optional year in industry			
EEE BEng Level 3+			
Module Code	Module Title	Trimester	Credits
M3H721925	Industrial Practice ²	A/B	60
Exit Award – BEng (unclassified) Electrical and Electronic Engineering			420

EEE Level 4			
Module Code	Module Title	Trimester	Credits
MHH623549	Honours Project Engineering	A/B	40
MHH623541	Digital Signal Processing	A	20
Optional modules - Trimester A ³ (choose 1 from):			
MHH623542	Digital Design and Computer Architecture	A	20
M3H120320	Engineering Design and Analysis 3	A	20
Optional modules - Trimester B ³ (choose 2 from):			
MHH623546	Intelligent Robotics and Mechatronics	B	20
MMH623520	Wireless Communications	B	20
MHH123523	Computer Aided Design 2	B	20
MHH622747	Control Engineering 4	B	20
Exit Award – BEng (Hons) Electrical and Electronic Engineering			480

EEE Level 5 (MEng)			
Module Code	Module Title	Trimester	Credits
MMH723842	MEng Team Project	A/B	45
MMN223676	Strategy and Innovation	A	15
Optional modules - Trimester A ³ (choose 1 from):			
MMH626242	Advanced Telecommunications	A	15
MMH120620	Control Systems	A	15
Optional modules - Trimester B ³ (choose 3 from):			
MMH623545	Image Processing and Machine Vision	B	15
MMI123176	Real Time DSP	B	15
MMH623670	Condition Monitoring	B	15
MMH624198	Distributed Instrumentation	B	15
Exit Award – MEng Electrical and Electronic Engineering			600

	<u>Notes:</u>
1.	<i>Student Exchange (Optional).</i> After successful completion of Level 3 Trimester 1 students may be eligible to undertake an optional study exchange during Trimester 2 at an appropriate host Institution outwith the UK, provided the agreed programme of activity is equivalent to the curriculum and intended student experience normally undertaken in Level 3 Trimester 2. Successful completion of the study exchange is credit bearing to 60 credits.
2.	<i>Industrial Placement Year (Optional) Exit Award.</i> Students opting to undertake placement do so in the academic session after Level 3 studies. Assessment is via the additional 60 SCOTCAT level 3 credit module, M3H721925 Industrial Practice. Successful completion of that module gives (Sandwich) in the final exit award obtained by the student.
3.	<i>Optional modules.</i> Only specific combinations of optional modules are possible (due to pre-requisites). The availability of a particular module depends on the number of students taking the module.

8. ASSESSMENT REGULATIONS

The Glasgow Caledonian University Undergraduate Assessment Regulations can be accessed from:

<http://www.gcu.ac.uk/media/gcalwebv2/theuniversity/gaq/gaqfiles/assessmentregulations/University%20Assessment%20%20Regulations%202014-15%20Undergraduate.pdf>

The Glasgow Caledonian University Undergraduate Assessment Regulations apply to this programme with exceptions for the Honours Classification Scheme and anticipated updates to the Integrated Masters Progression and Classification Scheme.

1) Classification of Honours Award as described in Section 19.7.1

8.1 Programme Specific Regulations for the Classification of Honours

8.1.1 Award of Honours statement to replace University Regulations Section 19.7.1

The award of Honours will normally be made on the basis of an overall amalgamated aggregate of a student's performance in the modules studied at Level 3 and Level 4 of their programme irrespective of the actual level of any particular module studied at these levels.

This final overall amalgamated aggregate will be determined from:

i) a 25% weighting obtained from an aggregate of the marks for the modules studied at Level 3 of their programme.

and

ii) a 75% weighting obtained from an aggregate of the marks for the modules studied at Level 4 of their programme.

In the case of the amalgamated aggregate falling within the profiling boundaries defined in Section 19.8 the profiling will be based on a calculation set of the Level 4 results only and will follow the model criteria for profiling as defined in Section 19.8.3.

2) Progression to Final Year of Integrated Masters and Classification Scheme

8.2 Programme Specific Regulations for Progression to Integrated Masters and Classification Scheme.

Incorporation of specific amendments to the Glasgow Caledonian University Undergraduate Assessment Regulations to allow clarification of criteria for Progression to, and Classification of, Integrated Masters. This proposal was accepted by APC on 3 December 2014 subject to the provision of a transition timetable and the final text being put in place by the Assessment Regulations Working Group (ARWG).

In summary:

Entry to the final year of the Integrated Masters will require an average mark in year 4 results only of 50% or greater with module pass marks applied where modules are not passed at first attempt or compensated. If this criterion is not met, the student will be eligible to exit with a B.Eng. if they have met the university assessment regulations for a BEng. Honours award. All modules must be passed before progression to Integrated Masters.

As the Integrated Masters award is directly tied to the full satisfaction of the Academic Requirements of the relevant professional body associated with the programme, it is permissible for classification criteria for the Integrated Masters route to be specified at the approval stage (justified by sector norms and professional body requirements) and clearly specified in the programme documentation.

The Integrated Masters should be awarded as pass, merit or distinction, inline with the criteria for postgraduate masters awards. The pass mark for Integrated Masters awards will be 50%.

In the event that amendments are not incorporated then a request for exceptions will be made to address:

1. Module pass marks
2. Recording of marks at second attempt
3. Compensation rules
4. Combinations of exam and coursework elements
5. Essential elements for Professional, Statutory or Regulatory Body requirements
6. Consequential effects of module pass marks
7. Nullification of the results of an assessment of a single module
8. Carrying of modules to Integrated Masters' level
9. Progression to final year of Integrated Masters.