

Key Programme Information

Programme Specification Pro-forma (PSP)

1. GENERAL INFORMATION

1. Programme Title:	BEng (Hons) Engineering (Design and Manufacture)
2. Final Award:	BEng (Hons) Engineering (Design and Manufacture) – Graduate Apprenticeship
3. Exit Awards:	BEng Engineering (Design and Manufacture) – Graduate Apprenticeship DipHE Engineering (Design and Manufacture) – Higher Apprenticeship CertHE Engineering (Design and Manufacture) - Higher Apprenticeship
4. Awarding Body:	Glasgow Caledonian University
5. Approval Date:	July 2017
6. School:	School of Computing, Engineering and Built Environment
7. Host Department:	Department of Mechanical Engineering
8. UCAS Code:	
9. PSB Involvement:	Institution of Mechanical Engineers (IMechE) Institution of Engineering and Technology (IET) Institute of Measurement and Control (InstMC)
10. Place of Delivery:	N/A
11. Subject Benchmark Statement:	QAA Benchmarking Statements for Engineering
12. Dates of PSP Preparation/Revision:	June 2017/September 2018/June 2019/November 2020/October 2023

2. EDUCATIONAL AIMS OF THE PROGRAMME

2.1 Programme Philosophy

To produce multi-disciplinary professional Graduate Apprentice (GA) engineers with a bias toward mechanical engineering, who have the required knowledge and understanding of specific mechanical engineering principles, integrated with an understanding of general engineering, design, manufacturing and business, reinforced with good personal, inter-personal, team-working and project management skills, to enable them to perform effectively in any appropriate environment. This will be reinforced through significant formal integration of Work-Based Learning opportunities and Academic Assessment as negotiated with employers at each level.

2.2 General Aims of the Programme

- To create in the student an ability to think clearly and logically.
- To equip the student with a range of analytical methods for use in engineering applications.
- To provide such principles and practice as will allow the student to acquire an understanding of engineering to cope adequately with technological change.
- To develop the students' ability to contribute to the specification, design, testing, commissioning, modification, manufacture and maintenance of engineering artefacts and systems both generally and within the context of an employer's business.
- To develop fully the student's abilities in the use of computer aided engineering and

relevant aspects of information technology.

- To make the student aware of the ethics, social, economic, and environmental impact of engineering.
- To extend, enhance and improve the judgement of the student in decision making by extension of analytical, creative and intellectual skills.
- To integrate the expertise of staff gained from research, consultancy and scholarly activity into the programme materials where appropriate.
- To develop the students' interpersonal skills to enable effective communication and team working and operate within project management roles.
- To provide a broad education by an integrated study of vocational and academic disciplines.
- To integrate the programme with the student's developing experiential learning and training as part of an apprenticeship with his employer.
- To integrated a Work-Based Learning culture to deepen and broaden the academic understanding within the context of employer focussed activities.

2.3BEng(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, manufacture and monitoring of mechanical engineering systems.
- The ability to analyse and evaluate the performance, life cycle and operational characteristics of a range of mechanical engineering equipment.
- A strong theoretical understanding in mechanical engineering, 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 a mechanical engineering environment.
- An awareness and appreciation of the practical issues involved in the design, specification, manufacturing technologies, maintenance and commissioning of mechanical equipment and associated systems.
- An awareness of the social, regulatory and environmental impact of engineering solutions to the production, distribution, and utilisation of mechanical engineering equipment.
- Knowledge of the latest developments in the subject area through the inclusion of research material where appropriate based on research, consultancy and other scholarly activity.
- Draw together technical, project management and business skills developed during the programme and apply them to a Work-Based design or manufacturing project.

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

NB: There will be a minimum of 40 credits of contact per Trimester and 40 credits of dedicated Work Based Learning over the academic year, although the breakdown of the latter will be distributed across modules. Trimester C will be lighter loaded and will be dedicated to Work Based Learning (as detailed below), however there will also be negotiated Work Based Learning and Assessment for each module. Students will not be in Full-Time attendance mode and each Trimester will have a GA-specific timetable, a combination of traditional lecturing and 'Flipped Classroom' sessions. Level 1 Modules are core for all streams.

Yr. 1 (SCQF7)	Module Code	Module Title	Level	Credits	Trimester
	M1H326688	Engineering Science	1	20	A
	M1H326674	Mathematics 1	1	20	AB
	M1H326679	Mechanical Principles	1	20	B ¹
	M1H626681	Electrical Principles	1	20	B
	M1H130308	Integrated Engineering Studies 1 (IES1)	1	20	ABC ²

M1H326682	Modern Engineering Practice	1	20	ABC ²
-----------	-----------------------------	---	----	------------------

Notes:

1. These modules will be delivered through a 'Flipped Classroom' mode with dedicated seminar sessions in the timetable requiring periodic attendance at GCU.
2. These modules will be largely work-based so will be studied in parallel with the modules in Trimesters A and B. Any class contact required (as defined in a student's Individual Learning and Training Plan) could be arranged as IES1 is delivered to full-time students in Trimester A and Engineering Practice is delivered across A and B, with A representing the skills development and B representing the project element. The assessment, and therefore the modules, will be completed in Trimester C.

Exit with Certificate of Higher Education (CertHE) in Engineering (Design and Manufacture) – Higher Apprenticeship

Yr. 2 (SCQF8)	Module Code	Module Title	Level	Credits	Trimester
Core Modules					
	M2H326686	Mathematics 2	2	20	AB
	M2H324808	Thermodynamics & Fluid Mechanics	2	20	A ²
	M2H624806	Control and Instrumentation Systems	2	20	B ²
	M2H330273	Integrated Engineering Studies 2 (IES2) ¹	2	20	BC
Computer Aided Engineering Stream Modules					
	M2H726030	Manufacture & Materials 2	2	20	A ²
	M2H724807	Engineering Design and Analysis 2	2	20	B ²
Control & Instrumentation Stream Modules					
	M2H726030	Manufacture & Materials 2 (Option)	2	20	A ²
	M2H626267	Analogue and Digital Electronics (Option)	2	20	A ²
	M2H724807	Engineering Design and Analysis 2	2	20	B ²
Electrical Power Engineering Design Stream Modules					
	M2H626267	Analogue and Digital Electronics	2	20	A ²
	M2H626266	Electrical Distribution System	2	20	B ²

Notes:

1. This is the dedicated Work Based Learning and PDP credit for this Level and activities will be undertaken throughout the year and assessed in Trimester C.
2. The modules noted would be strongly connected to the company's requirements with Work Based Learning and Assessment strongly emphasised. This will contribute to the additional 20 credits of Work Based Learning at this Level.

Exit with Diploma of Higher Education (DipHE) in Engineering (Design and Manufacture) – Higher Apprenticeship

Yr. 3 (SCQF9)	Module Code	Module Title	Level	Credits	Trimester
Core Modules					
	M3H724811	Engineering Operations Management	3	20	B ²
	M3J923150	Energy Conversion Technologies	3	20	C ³
	M3H624797	Integrated Engineering Studies 3 ¹	3	20	BC
Computer Aided Engineering Stream Modules					
	M3H124814	Engineering Design & Analysis 3	3	20	A ²
	MHH124813	Computer Aided Engineering	4	20	A ²

Notes	M3H724815	Manufacture & Materials 3	3	20	B ²
		Control & Instrumentation Stream Modules			
	M3H124814	Engineering Design & Analysis 3	3	20	A ²
	M3H627229	Control Engineering 3	3	20	A ²
	M3W226524	Instrumentation	3	20	B ²
		Electrical Power Engineering Design Stream Modules			
	M3H623070	Power Electronic Systems 3	3	20	A ²
	M3H627229	Control Engineering 3	3	20	A ²
	M3H625943	Electrical Machines	3	20	B ²
		<div>1. The project assessment part of this module could be utilised to provide a feasibility study for the Level 4 project activity.</div> <div>2. As for Level 2, all technical modules will be delivered with integrated Work Based Learning and Assessment.</div> <div>3. This module is delivered by Distance Learning.</div>			
Exit with BEng Engineering (Design and Manufacture) – Graduate Apprenticeship					

Yr. 4 (SCQF10)	Module Code	Module Title	Level	Credits	Trimester ¹
Notes	Computer Aided Engineering Stream Modules				
	MHH124819	Engineering Design & Analysis 4	4	20	A
	MHH126676	Simulation for Design and Manufacture	4	20	A
	MHH127231	Computer Aided Design 2	4	20	B
	MHH325993	Design Process, Assembly and Manufacture (Option)	4	20	B
	MHH325992	Renewable Energy Equipment Design (Option)	4	20	B
	Control & Instrumentation Stream Modules				
	MHH124813	Computer Aided Engineering	4	20	A
	MHW226260	Applied Instrumentation Systems	4	20	A
	MHH622747	Control Engineering 4	4	20	B
	MHW226259	Systems Health Management	4	20	B
	Electrical Power Engineering Design Stream Modules				
	MHH630298	Power Systems Analysis	4	20	A
	MHH623513	Renewable Power Integration	4	20	A
	MHH622747	Control Engineering 4 (Option)	4	20	B
	MHH630295	Power System Protection and Automation (Option)	4	20	B
	MHH625270	HV and Condition Assessment	4	20	B
	Core Module				
	MHH624821	Honours Project (Engineering)	4	40	ABC ¹
	1. The order of modules will be fixed for the fourth and final year, with the project completed over 12 full-time weeks in the work place. At 35 hours per week, this would be 420 hours which is greater than the notional contribution for a 40 credit module of 400 hours. Suitable consideration will be given to account for annual vacation periods.				
Exit with BEng(Hons) Engineering (Design and Manufacture) – Graduate Apprenticeship					

8. ASSESSMENT REGULATIONS

Students should expect to complete their programme of study under the Regulations that were in place at the commencement of their studies on that programme, unless proposed changes to University Regulations are advantageous to students.

The Glasgow Caledonian University Undergraduate Assessment Regulations¹ apply to this programme with exceptions for the Honours Classification Scheme and anticipated updates to the Integrated Masters Progression and Classification Scheme.

Classification of Honours Award as described in Section 19.7.1

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.

8.1 Role of External Examiners

External Examiners are appointed to Programmes. The key duties of the External Examiner are:-

- To ensure that the standard of any award which is recommended by the Assessment Board is comparable to the standard of similar awards conferred by Universities in the United Kingdom
- To satisfy him/herself that the work and decisions of the Assessment Board are consistent with the policies and regulations of the University and best practice in Higher Education
- To ensure that students have been assessed fairly and within the regulations approved by the University for the programme
- To comment on the appropriateness and consistency of assessment practices and procedures across the modules which comprise the award
- To inform the University on any matter which, in his/her view, militates against the maintenance of proper academic standards
- To inform the Clerk to Senate if he/she decides to resign over a matter of principle in order that this may be brought to the attention of Senate as a matter of urgency

¹ <https://www.gcu.ac.uk/academicqualityanddevelopment/academicquality/regulationsandpolicies/universityassessmentregulationsandpolicies/>

To produce annually a report for consideration by the School Board and, subsequently, the Academic Policy Committee, on the standards attained by students on the programme and on any other matters which may seem appropriate for report.