Undergraduate Programme Specification
MEng/BEng (Hons)/Beng Mechanical Engineering (Design/Systems)

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				
Programme Title	MEng/BEng (Hons)/BEng Mechanical Engineering (Design) Mechanical Engineering (Systems)			
Final Award	MEng Mechanical Engineering (Design) MEng Mechanical Engineering (Systems) BEng (Hons) Mechanical Engineering (Design) BEng (Hons) Mechanical Engineering (Systems) BEng Mechanical Engineering (Design) BEng Mechanical Engineering (Systems) DipHE in Mechanical Engineering CertHE in Engineering			
Awarding Body	Glasgow Caledonian University			
School	School of Science and Engineering			
Department	Department of Mechanical Engineering			
Mode of Study	Full-time Part-time			
Location of Delivery	Glasgow Campus			
UCAS Code	MEng ME (H381) BEng (Hon) ME (H380) BEng ME (College Pathway) (H370)			
Accreditations (PSRB)	Institution of Mechanical Engineers [IMechE]			
Period of Approval	**From:**	September 2026	**To:**	August 2030

2. EDUCATIONAL AIMS OF PROGRAMME

Programme Philosophy

To produce multi-disciplinary professional 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, manufacturing and business, reinforced with good personal, inter-personal and team-working skills, to enable them to perform effectively in any appropriate situation.

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.
- 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.
- To 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 mechanical engineering systems.
- The ability to analyse and evaluate the performance 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 complex engineering problems in a mechanical engineering environment.
- An awareness and appreciation of the practical issues involved in the design, specification, maintenance, commissioning and manufacture 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 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 complex 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.

3. LEARNING OUTCOMES

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 Tables in Appendix]:

A: Knowledge and understanding.

A1 Knowledge and understanding of scientific and mathematical principles and methodology necessary to underpin their education in their engineering discipline and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.

A2: The engineering principles, concepts, and theories relevant to their own engineering discipline and other engineering disciplines and an awareness of developing technologies related to their own engineering specialism.

A3: The analytical methods, modelling techniques, computer models and software tools relevant to their engineering discipline in order to solve engineering problems.

A4: Structured design processes and methodologies and a systems approach to engineering problems and product design.

A5: The commercial and economic context of engineering activity and the management techniques, which may be used to achieve engineering objectives within that context.

A6: The framework of relevant legal requirements, codes of practice, quality issues and industrial standards governing engineering activity and product design.

A7: The multi-disciplinary nature of product engineering, the need for a high level of professional and ethical conduct in engineering practice, and the requirement for engineering activities to promote sustainable development.

B: Practice: Applied knowledge, skills and understanding.

B1: Demonstrate proficiency in the use of specialist equipment, development tools, materials and processes employed in design and manufacturing systems.

B2: Exercise safe working practices and demonstrate proficiency in workshop and laboratory skills.

B3: Use and manage a structured design process in the creation and development of an economically viable product.

B4: Demonstrate a critical appreciation of the complexity and interaction of managerial, technical and environmental issues in the modern workplace.

B5: Manage sustainable and ethical product design within companies and across supply chains.

B6: Apply project management and business practices appropriately.

B7: Operate and act responsibly, adhere to professional codes of practice and industrial standards, taking account of the need to progress environmental, social and economic outcomes simultaneously.

B8: Specialist knowledge in design and manufacturing engineering and its application.

B9: Critical thinking and problem solving applied to design and manufacturing engineering.

B10: Critical analysis.

B11: Effective information retrieval and research skills.

B12: Commercial awareness.

C: Generic cognitive skills.

C1: Apply mathematical methods and scientific and engineering principles proficiently in the analysis, synthesis, performance assessment, critical appraisal and evaluation of design and manufacturing systems.

C2: Select and apply appropriate analytical and computer-based methods for modelling and analysing engineering problems.

C3: Select and apply appropriate computer software tools to the synthesis, implementation, evaluation, analysis and solution of electronic problems and systems.

C4: Investigate and define a problem and identify constraints including environmental and sustainability, health and safety and risk assessment issues.
C5: Apply a systems approach to the analysis and solution of engineering problems and the design of manufactured products.
C6: Use imagination, creativity and innovation, through synthesis of ideas, to provide products and services whilst exercising professional judgment and methods to resolve dilemmas arising from ethical, sustainability and financial constraints.
C7: Apply management techniques to achieve engineering objectives within a commercial and economic context.

D: Communication, numeracy and ICT skills
D1: Communication skills; written, oral and listening.
D2: Numeracy as applied to the solution of engineering problems.
D3: Computer literacy as applied to the solution of engineering problems.
D4: Presentation skills.

E: Autonomy, accountability and working with others.
E1: Self-confidence, self-discipline & self-reliance (independent working).
E2: Awareness of strengths and weaknesses.
E3: Creativity, innovation & independent thinking.
E4: Appreciating and desiring the need for continuing professional development.
E5: Reliability, integrity, honesty and ethical awareness.
E6: Entrepreneurial, independence and risk-taking.
E7: Ability to prioritise tasks and time management (organising and planning work).
E8: Interpersonal skills, team working and leadership.

Intended Learning Outcomes

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

The programme learning outcomes are derived from the following sources, principally the QAA Engineering Benchmark Statements (now linked to UK-SPEC).

- QAA Engineering Benchmark Statements (now linked to UK-SPEC)[1],
- Engineering Council UK Standard for Professional Engineering Competence (UK-SPEC)[2]
- The Educational Aims of the Programme (GCU Employability Assets)

A mapping of the programme learning outcomes to the modules is shown in Appendix, Curriculum Map and Cross Map (UK-SPEC to GCU Employability Assets). The intended learning outcomes are communicated to students via the student (Programme) Handbook.

<u>At BEng/BEng (Hons)</u>

Specific Learning Outcomes in Engineering
Science and Mathematics
Engineering Analysis
Design and Innovation
The Engineer and Society

[1] THE ACCREDITATION OF HIGHER EDUCATION PROGRAMMES, UK Standard for Professional Engineering Competence, https://www.engc.org.uk/media/3877/uk-spec-v12-web.pdf

[2] UK STANDARD FOR PROFESSIONAL ENGINEERING COMPETENCE, Engineering Technician, Incorporated Engineer and Chartered Engineer Standard,

https://www.engc.org.uk/media/3464/ahep-fourth-edition.pdf

Engineering Practice

At MEng in addition to BEng (Hons)

Science and Mathematics
Engineering Analysis
Design and Innovation
The Engineer and Society
Engineering Practice

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.

Strategy for Learning (SfL)

The SfL for the MEng/BEng(hon)/BEng Mechanical Engineering (Design/Systems) programmes is fundamental to achieving the overall aims of the programme. The teaching approach is student centred, practical and participative and has been designed to move away from the traditional teacher centred paradigm to a more active, student driven, personalised engaged model of learning using state of the art technologies necessary for employability in a digital age.

Students are encouraged to take a broad view of their education and contextualise course materials to their personal objectives and the real world. A range of delivery methods are used on the programme including lectures; group-based tutorials and seminars (both tutor and student led); group based practical exercises in concept design (supervised and directed); problem based learning scenarios and case studies; directed study; coursework assignments (individual and group-based) and supervised projects. Online digital support media allows students to utilise alternative learning materials suitable to their personal learning style.

GCU's SfL is underpinned by a model comprised of ten design principles. This programme embeds these principles in the following ways.

Engaged learning:

- Glasgow Caledonian University (GCU) is committed to improving retention especially that of students from the most disadvantaged backgrounds, in particular, care leavers and articulating students. GCU believes that the HEA Student Retention and Success Change Programme offers the opportunity to promote a sense of engagement and belonging at school-level across the institution. The programme has been selected as one of three pilot

programmes in this important area for GCU. The outcome of the survey held in October 2018 returns a higher scaled score for belongingness, engagement and self-confidence than students in other Schools and across the sector. The survey also shows that this programme had the highest score at GCU for belongingness and self-confidence.

- The student experience begins with an early introduction to the programme before articulation from partner FE Institutions. The programme team conducts regular visits to the FE Articulation Partner Institutions providing valuable information on the programme and assisting students in the application process. The sense of belongingness begins before the student comes to GCU.
- Induction is carried out before the students start classes in week 1 and is carried out by members of the programme development team. The same staff members are also involved in teaching the students from the first week of Trimester A allowing a continuity of exposure to key staff in the programme.
- Group working will form a large part of the student experience from Trimester A of SCQF 7 in the modules Modern Engineering Practice and Engineering for Society, followed by group assessments throughout SCQF 8 and 9 in the Engineering Design and Analysis modules, and also in Trimester B of SCQF 9 within the IES3 module. The MEng Team Project is also a significant group working activity for the students. This allows students experience in working in unfamiliar groups thus widening peer relationships.
- There is a clear coherent pathway of study designed to empower students to take increasing responsibility for their learning as they progress through the student journey, moving from mainly classroom and structured laboratory work to independent project and work-based activities in Levels SCQF 9 and 10. Full time students entering at SCQF 9 will already have demonstrated confidence by following the articulation route and planning for BEng degree attainment, to be followed again by independent project and work-based activities in SCQF 9, 10, and 11.
- Regular Student Staff Consultative Group meetings (once a Trimester for each academic year) are held to allow students to offer suggestions for improvement to individual modules and the programme.

Divergent thinking

- From the first year of study (SCQF 7) students will develop skills in divergent thinking and creativity in several modules. Modern Engineering Practice, the Engineering Design and Analysis modules at SCQF 8, 9, 10, IES3, and the Computer Aided Engineering modules involve students in the development of engineering solutions from initial concept to working systems. IES3 introduces students to other disciplines with interaction between students at home and overseas. Regular video conference calls are held to allow discussion of ideas, concepts, complex problems, and group solutions in the development of a product or system of interest to many different groups.
- This also occurs in SCQF 10 and 11 during the BEng (hons) and MEng Team Project where students work individually and in multi-disciplinary teams on a major topic of study. Many of the modules in the programme are based on Renewable Technologies and their application to solving the global warming challenges.

Personalised Learning

- As above, IES3 allows students to engage in the development of products in an area of personal or career interest.
- The individual project in L4 (SCQF 10) allows students to develop and work on projects in areas of personal interest.
- Every module involves personal study time when students are expected to work on their own, managing and prioritising their own study needs.
- The programme team is committed to creating opportunities for international exchange to enhance learning and provide access to a global experience. This is a key objective of the international strategy which links closely to the learning and teaching objectives.
- Students are given feedback on assessments. Module Leaders and Module Tutors are available for additional feedback on student performance as appropriate.

Inclusive and Accessible Learning

- Early in SCQF 7, in the Modern Engineering Practice module, students are expected to develop skills in basic mechanical and electrical engineering practical skills that help provide understanding of what it takes to get from specification to a working prototype. Throughout the Engineering Design and Analysis modules and the concepts introduced in Mechanical Principles modules in the first year are built upon and developed to use more complicated mechanical equipment. For the ME(D) students there is also a link between the concepts introduced in the Computer Aided Engineering module in SCQF 9, that is, Computer Aided Design through Simulation for Design and Manufacture, and Computer Aided Design, to the SCQF 10 Modules, Computer Aided Design 2, culminating in the SCQF 11 modules, Applied Thermofluids and CFD and Advanced Computer-Aided Engineering. This notion of “connected learning” is considered by the programme team and the students to be a valuable tool to enhance understanding and relevance.
- All the modules are made accessible to all through support from GCULearn, and the provision of access to industry standard support through resources such as the ANSYS Customer Portal for Simulation for Design and Manufacture learning materials. The ANSYS software and the PTC Creo 3D Modelling software have both been made available through Remote Desktop Access and AppsAnywhere, which means that these programmes can be accessed from home or in the University’s 24 Hour Lab, as well as a range of other laboratories not necessarily dedicated to their use.
- The school has experience of developing and delivering programmes to a wide range of students. Based on identified needs, specific staff development, adaptation of resources and the development of learning and teaching approaches are continually taking place to ensure access to the curriculum. Expertise and resources are in place to provide access to and support students with a range of disabilities. The programme team fully supports the University’s vision for Equality and Diversity and is fully committed to supporting "A culture and environment which is inclusive of all sections of society and responsive to the needs of individuals. Resulting in staff, students and other stakeholders who are free from any form of discrimination in respect of all their dealings with Glasgow Caledonian University, enabling them to participate fully in all aspects of University life and make a valuable contribution to the success of the institution."
- The programme team is committed to the principles of promoting equality of opportunity through eliminating discrimination and disadvantage and recognising the benefits of diversity. The Programme Board for the proposed programmes will ensure that all potential and current staff, students, and other stakeholders are treated fairly, and are not discriminated against on grounds of sex, marital status, gender reassignment, racial group, disability, sexual orientation, religion or belief, age, socio-economic background, trade union membership, family circumstances, or any other irrelevant distinction. The Programme Board will strive to create an inclusive and supportive environment for students that values diversity and promotes equality.

Broader/deeper Learning

- Again, the Engineering for Society, Engineering Operations Management, Electrical Principles, and IES3 introduces students to other disciplines such as electrical and electronic engineering, manufacturing engineering, personal development, business and financial skills and marketing in the group development of a product or system.
- A variety of assessment methods are used within the modules, depending on the aims, objectives, and the learning outcomes of the module. For example, some of the modules are more theoretical in nature and others are more practical or software based, while others are more discursive, or presentation based. These therefore require different teaching and learning and assessment approaches. The most common tools of assessment used are unseen examinations and coursework assessment exercises of various types.

- Examinations are taken at the end of a Trimester and endeavour to test understanding and the application of knowledge under strictly controlled conditions. The unseen examination tests the ability of the student to apply analytical and synthesis skills within a limited timeframe.
- Coursework can take a number of forms: i) Coursework which tests understanding without the element of recall, computer-based design exercises, critically research a topic and report; ii) Presentations and vivas; iii) Laboratory work and critical appraisal and evaluation of results; iv) Project activity; v) In-class tests (open or closed book) – period of recall is shorter and under more relaxed conditions; vi) A major formal coursework is a take home exercise that can be completed in six to eight hours work by the average student, an in-class test that can be completed in 2 hours and extensive laboratory report or program folder; vii) A minor formal coursework is normally completed in class time and can be a class test, a laboratory report, a programming exercise or similar.

Flexible Learning

- Applicants may be eligible for admission under the GCU Recognition for Prior Learning (RPL) Policy. Credit Transfer or Recognition for Prior Informal Learning (RPiL) can be applied for by any student. Consideration of pre-admission claims for RPL from potential students is coordinated centrally by the Student Recruitment and Admissions Service (SRAS) and will normally involve consultation with the programme leader or Associate Dean for Learning Teaching and Quality.
- The programme has five exit award opportunities to allow students to exit the programme after one year with CertHE, two years with DipHE, three years with BEng unclassified, four years with BEng (Hons) or five years with MEng. After SCQF 9, and before SCQF 10, students can elect to engage in an industrial placement and be credited in the Industrial Practice module, or can spend a year on European exchange, ideally including an industrial placement. Students are also encouraged to investigate opportunities to study abroad during SCQF 9. Usually an ERASMUS exchange, the students may take time abroad studying the ERASMUS International Semester/European Project Semester instead of IES3 and the other specialist modules.

Global Learning

- As above, in particular though the opportunity to take part in an exchange opportunity preferable, but not restricted to, in SCQF 9 Trimester B.
- The school is also actively involved in the Science Without Borders initiative and students from overseas often enrol in modules and integrate with our own home students as well as students from other overseas countries. Students develop global perspectives both cross-culturally and professionally by this interaction.
- The IES3 module also includes Skype interaction with students from the United States.

Real World problem solving

- These programmes are represented on the Department of Engineering's Industrial Advisory Board. This Board brings together academic staff with selected individuals from local industry including BAE Systems, Babcock International, Clyde Bergemann, Howden Compressors, Main Tool, NCE Switchgear, Rolls Royce, Scottish Power, with the aim of ensuring that the programme is meeting the needs of industry and that the industry is aware of research and programme development within Department.
- The students' professional development starts in the Engineering for Society module with presentations from the Professional Institutions associated with the programme. This module also includes the development of transferable skills such as report writing and academic language, as well as presentation skills.
- The programme has a strong interaction with the University Careers Service, with a dedicated representative for the school. This representative is involved in the Industrial Advisory Board, in the delivery of material for the IES modules, including the development

of a CV tailored to their application for either a placement or a graduate job, and in the preparation for an interview for either of these opportunities.

- Assessments for the Engineering Design and Analysis modules and the CAE modules are generally based on complex real world problems.
- Studying modules throughout the programme in parallel, and particularly throughout SCQF 10 when the final year project is required to be completed in parallel with the taught modules, assists the students with their time planning and workload balance. This continues at SCQF 11 when the Team Project is also required to be completed in parallel with taught modules.

Entrepreneurship and employability

- The entrepreneurial attitudes of the students are developed through a range of modules and study opportunities, including IES3, Placements and the MEng Team Project. All these modules contain aspects where the students are required to consider the business aspects of engineering decisions they are making.
- The students also undertake the Strategy and Innovation module at SCQF 11 where they are encouraged to explore methods for innovative developments.
- Furthermore, the IES theme, from first year, encourages the students to consider ethical working practices and the design of products for sustainable development. The students are all encouraged to join the world leading Professional Bodies, IET and IMechE, the latter of which accredits these programmes, as student members. They are also encouraged to attend the public lectures delivered by these bodies which provide an opportunity to develop their knowledge of the application of engineering principles, see complex "real world" problems being solved, and network with fellow students and professional engineers alike. IMechE accreditation of both ME(D) and ME(S) is a vitally important differentiator of the programmes and accreditation is continually emphasised by employers as a key factor in sending students to GCU.

Responsible leadership and professionalism

- SCEBE offers a range of BEng, BEng (Hons), MEng and MSc programmes that are fully professionally accredited for either Chartered Engineer or Incorporated Engineer recognition. UK_SPEC has an emphasis on these two specifics, but different, levels of professional recognition. Students with the MEng or MSc + BEng (Hons) meet or partially meet the academic requirements for Chartered Engineer registration and those with BEng or above satisfy the academic requirements for Incorporated Engineer registration.
- The programme was designed with the intention of seeking professional body accreditation and was successfully accredited by the Institution of Mechanical Engineers in 2017 shortly after university approval, with an upcoming event planned for validation of the outputs from the MEng level of the programmes. Professional ethics, standards and leadership are intrinsic to professional accreditation and accrediting bodies are satisfied that students will meet the professional expectations on graduation.

21st Century Graduate Attributes

The School recognises that for the 21st century, graduates are more and more required to demonstrate global citizenship and be equipped with the necessary skills, confidence and experience to achieve life ambitions.
The GCU Graduate attributes are identified as:

- Discipline Knowledge and Application
- Communication Skills
- Learning Research and Enquiry
- Creativity, Confidence and Enterprise
- Citizenship

Staff are aware of the importance of professionalism and exhibit this at every opportunity within the learning experience at curriculum together with the professionalism shown by all staff involved in programme delivery. The Mechanical engineering subject group has the largest

number of Chartered Engineers and Fellows in SCEBE, and the department contributes towards annual membership to support interaction with the Institutions. Staff members are active in the IMechE association and students are encouraged by chartered engineers to register as members.

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.

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

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

5.1 Programme Specific Regulations for the Classification of Honours

5.1.1 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

5.1Programme 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 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, in line with the criteria for postgraduate master's 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.

5.2Role 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 Progression and Award 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 Progression and Award 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

- 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.

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:
https://www.gcu.ac.uk/study/courses/undergraduate-mechanical-engineering-glasgow

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

6.1 FULL-TIME/SANDWICH PROGRAMME

6.1.1 Minimum Entry Qualifications

Candidates for the programme will normally be at least 17 years of age at the start of the programme and should have passed one of the following (6.1.2 to 6.1.6)

6.1.2 Scottish Certificate of Education, for L1 entry, with:
MEng route: ABBB
BEng route: BBBC

The subjects passed must include Higher Grade Mathematics and at least one Higher Grade in either Technology Studies or Engineering Science plus Nat 5 English, all of which should be at Grade C or above.

6.1.3 General Certificate of Education, for L1 entry, with:
2 A or 3 A/AS Level subjects.

The subjects passed must include A/AS Level Mathematics and at least one A/AS Level in Technology Studies or Engineering Science plus English.

6.1.4 HND/HD Entry

Applicants, who have completed a Higher National Diploma or Higher Diploma (with at least 4 merits) in an appropriate area, will be considered for direct entry to the second year of the degree programme. In addition, exemptions may be given to some level 2 modules and in exceptional circumstances will be offered direct entry to year 3. The latter would typically apply to articulation arrangements with FE Colleges who might offer an HND plus balancing studies to achieve full exemption from level 1 and 2 of the programme.

Essential:
Mathematics 1, 2, 3, 4 and 5 (H7K033, H7K134, H7K234, H7K335 and H7K435) or equivalent

OR

Mathematics for Engineers 1, 2 and 3 (DG4H 33, DG4L 34, DG4P 35) or equivalent,

And a Minimum of B in the 2nd year graded unit, or equivalent.

6.1.5 HNC/HC Entry

A good Higher National Certificate or Higher Certificate (with at least 4 merits) in an appropriate engineering subject. Applicants who satisfy the above may, dependent on the HN modules taken, be offered exemption from some year 1 modules and in exceptional circumstances will be offered direct entry to year 2. The latter would typically apply to articulation arrangements with FE Colleges who might offer an HNC plus balancing studies to achieve full exemption from level 1 of the programme. Alternative routes for direct entry to year 2 are an HNC + relevant experience (refer Section 6.3.3), or HNC + passes in Mathematics I and Engineering Computing I (by Distance Learning or part-time study) or equivalents.

Mathematics for Engineers 1, and 2 or equivalent,
And a Minimum of B in the graded unit, or equivalent.

6.1.6 GCU Pathways (H370) Programme Admission Requirements
The minimum entry requirements are:

SQA Higher: BB (must include Maths or a Science) or equivalent.

NB: GCU Pathways students enrol at Glasgow Caledonian University. Over the first two years, students study an HND Mechanical Engineering at City of Glasgow College in preparation for transfer to the BEng Mechanical Engineering programme at Level 3.

Please Note: GCU Pathways levels 1 and 2 are delivered at City of Glasgow College.
Further information on the GCU Pathways Levels One and Two can be accessed from City of Glasgow College (HND Mechanical Engineering)

Transfer:
Students who successfully complete the HND Mechanical Engineering with Graded Units of BB and pass Engineering Mathematics 1, 2, 3, 4 and 5. (H7K0 33, H7K1 34, H7K2 34, H7K3 35 & H7K4 35) may transfer to Level 3 of the BEng Mechanical Engineering programme. Attendance and a pass at Maths Summer School is compulsory for those without Engineering Mathematics 5 (H7K4 35).

6.1.7 Access Programme Entry

Consideration will be given to applicants who have successfully completed an Access to Science and Engineering in Higher Education programme. The programme is designed specifically to tutor candidates, who have not obtained the appropriate formal qualifications, to a level in Mathematics and Engineering Science to enable them entry to a degree

6.1.8 Summer School Entry

Candidates who comply with the pointage requirements above but do not have H Grade or A/AS Level passes in Mathematics and Science may enter the programme provided, they successfully complete the University Summer School Programme in these subjects.

6.2 PART-TIME PROGRAMME

6.2.1 HNC/HC/HD Entry

Applicants who have completed a good Higher National Certificate or Higher Certificate (with at least 4 merits) in an appropriate engineering discipline will be considered for entry to the first year of the programme (as outlined in Table 4.2). Those who have completed a good Higher Diploma in an engineering discipline will be considered for direct entry to year two of the part-time programme.

6.2.2 Other Qualifications

Applicants with other qualifications will be considered for entry and judged in terms of qualifications offered, maturity and experiential learning.

6.3 FULL-TIME, SANDWICH AND PART-TIME PROGRAMMES

6.3.1 Mature Student Entry

Mature students, who do not possess normal programme entry qualifications, may be considered for entry to the programme under the current general regulations for mature students. In such cases prospective students will be interviewed to assess whether the student can demonstrate sufficient motivation, potential and relevant knowledge to convince the interviewer that there is a strong possibility of successful completion of the programme.

6.3.2 Flexible Entry: Credit Transfer and RPL

The University's Guidance Document will be adhered to for all applicants. An applicant may wish to offer prior learning or experience or a combination of this and a formal qualification to gain access to the programme.

6.3.3 Applicants with a disability

All applicants for admission to the programme who declare a disability will be invited to a meeting with the School and/or University Disability Advisor in order that the specific needs of the applicant can be assessed and a plan to address the specific learning needs developed. The School and University is committed to providing an accessible curriculum for all its students and will make reasonable adjustments to facilitate this.

7. PROGRAMME STRUCTURE AND AVAILABLE AND FINAL EXIT AWARDS

See also Appendix Tables 3.1.1 and 3.2.1 for assessment weighting details.

a. FULL-TIME STUDY MODE

Mechanical Engineering – Design or Systems (common 1st and 2nd year)

Year 1 - SCQF 7				
Module Code	Module Title	Level	Credits	Assessment Method
M1H326673	Mathematics 1	1	20	50% CW, 50% EX
M1H326677	Mechanical Principles	1	20	100% CW
M1H626680	Electrical Principles	1	20	100% CW
M1H326682	Modern Engineering Practice	1	20	100% CW
M1H626678	Engineering for Society	1	20	100% CW
M1H326689	Engineering Science	1	20	100% CW
Exit with Certificate of Higher Education (CertHE) in Engineering				
Year 2 - SCQF 8				
M2H326684	Mathematics 2	2	20	50% CW, 50% EX
M2H323512	Thermodynamics & Fluid Mechanics	2	20	30% CW, 70% EX
M2H720058	Manufacture & Materials 2	2	20	50% CW, 50% EX
M2H630297	Electrical Distribution Systems	2	20	50% CW, 50% EX
M2H622325	Control and Instrumentation Systems	2	20	30% CW, 70% EX
M2H721926	Engineering Design and Analysis 2	2	20	30% CW, 70% EX
Exit with Diploma of Higher Education (DipHE) in Mechanical Engineering				

Mechanical Engineering – Design BEng

Year 3 - SCQF 9				
Module Code	Module Title	Level	Credits	Assessment Method
MHH113285	Computer Aided Engineering	4	20	100% CW
M3H721406	Manufacture & Materials 3	3	20	30% CW, 70% EX
M3H120320	Engineering Design & Analysis 3	3	20	30% CW, 70% EX

	EITHER			
M3J923150	Energy Conversion Technologies	3	20	30% CW, 70% EX
M3H623554	Integrated Engineering Studies 3	3	20	100% CW
M3H723623	Engineering Operations Management	3	20	30% CW, 70% EX
	OR			
M3H623747	European Project Semester	3	60	100% CW
Exit with BEng Degree in Mechanical Engineering (Design)				
Year 4 - SCQF 10 Sandwich Programme [Optional for those students not previously on European Project Semester]				
M3H721925	Industrial Practice	3	60	100% CW
M3K226158-60	SSE Exchange	3	60	100% CW
Year 4 - SCQF 10 Full-Time Programme **Year 5** - Sandwich Programme				
MHH330274	Mechanical Engineering Research Project	4	40	100% CW
MHH126675	Simulation for Design and Manufacture	4	20	100% CW
MHH122359	Engineering Design & Analysis 4	4	20	30% CW, 70% EX
MHH123523	Computer Aided Design 2	4	20	100%CW
OPTIONS (Choose 1 from 2)				
MHH323630	Design Process, Assembly and Manufacture	4	20	50% CW, 50% EX
MHH323524	Renewable Energy Equipment Design	4	20	30% CW, 70% EX
Exit with BEng (Honours) Degree in Mechanical Engineering (Design)				

Mechanical Engineering – Design MEng

Year 5 - SCQF 11 Full-Time Programme **Year 6** - Sandwich Programme				
Module Code	Module Title	Level	Credits	Assessment Method
MMH723842	MEng Team Project.	5	45	100% CW
MMN223676	Strategy & Innovation	5	15	50% CW, 50% EX
MMH323561	Applied Thermofluids & CFD	5	15	50% CW, 50% EX
MMH723672	Manufacturing Management	5	15	50% CW, 50% EX
MMH123668	Advanced Computer Aided Engineering	5	30	100% CW
Exit with MEng Degree in Mechanical Engineering (Design)				

Mechanical Engineering – Systems BEng

Year 3 - SCQF 9				
Module Code	Module Title	Level	Credits	Assessment Method
M3H606414	Control Engineering 3	3	20	30% CW, 70% EX
M3H721406	Manufacture & Materials 3	3	20	30% CW, 70% EX
M3H120320	Engineering Design & Analysis 3	3	20	30% CW, 70% EX
	EITHER			
M3J923150	Energy Conversion Technologies	3	20	30% CW, 70% EX
M3H623554	Integrated Engineering Studies 3	3	20	100% CW
M3H723623	Engineering Operations Management	3	20	30% CW, 70% EX
	OR			
M3H623747	European Project Semester	3	60	100% CW
Exit with BEng Degree in Mechanical Engineering (Systems)				
Year 4 - SCQF 10 Sandwich Programme [Optional for those students not previously on European Project Semester]				
M3H721925	Industrial Practice	3	60	100% CW
M3K226158-60	SSE Exchange	3	60	100% CW
Year 4 - SCQF 10 Full-Time Programme **Year 5** - Sandwich Programme				
MHH330274	Mechanical Engineering Research Project	4	40	100% CW
MHH113285	Computer Aided Engineering	4	20	100% CW
MHH122359	Engineering Design & Analysis 4	4	20	30% CW, 70% EX
MHH323630	Design Process, Assembly and Manufacture	4	20	50% CW, 50% EX
OPTIONS (Choose 1 from 2)				
MHH622747	Control Engineering 4	4	20	30% CW, 70% EX
MHH323524	Renewable Energy Equipment Design	4	20	30% CW, 70% EX
Exit with BEng (Honours) Degree in Mechanical Engineering (Systems)				

Mechanical Engineering – Systems MEng

Year 5 - SCQF 11 Full-Time Programme **Year 6** - Sandwich Programme				
Module Code	Module Title	Level	Credits	Assessment Method
MMH723842	MEng Team Project.	5	45	100% CW

MMN223676	Strategy & Innovation	5	15	50% CW, 50% EX
MMH323561	Applied Thermofluids & CFD	5	15	50% CW, 50% EX
MMH623670	Condition Monitoring	5	15	50% CW, 50% EX
MMH226690	Advanced Engineering Mechanics	5	15	30% CW, 70% EX
MMH126833	Digital Twins	5	15	100% CW
Exit with MEng Degree in Mechanical Engineering (Systems)				

7.2 PART-TIME STUDY MODE

Assumes entry with Advanced Standing equivalent to 120 Credits at Level 1

Mechanical Engineering PT – Design BEng

Year 1 PT - SCQF 7				
Module Code	Module Title	Level	Credits	Assessment Method
M2H720058	Manufacture & Materials 2	2	20	50% CW, 50% EX
M2H323512	Thermodynamics & Fluid Mechanics	2	20	30% CW, 70% EX
M1H323563	Engineering Mathematics	1	10	30% CW, 70% EX
M2H624585	Electrical Distribution Systems	2	10	50% CW, 50% EX
M2H721926	Engineering Design and Analysis 2	2	20	30% CW, 70% EX
Exit with CertHE Certificate of HE in Engineering				
Year 2 PT - SCQF 8				
M2H326684	Mathematics 2	2	20	50% CW, 50% EX
M3H721406	Manufacture & Materials 3	3	20	30% CW, 70% EX
M2H622325	Control and Instrumentation Systems	2	20	30% CW, 70% EX
M3J923150	Energy Conversion Technologies	3	20	30% CW, 70% EX

Exit with DipHE Diploma of HE in Mechanical Engineering				
Year 3 PT - SCQF 9				
MHH113285	Computer Aided Engineering	4	20	100% CW
M3H120320	Engineering Design & Analysis 3	3	20	30% CW, 70% EX
M3H723623	Engineering Operations Management	3	20	30% CW, 70% EX
M3H623554	Integrated Engineering Studies 3	3	20	100% CW
Exit with BEng Degree in Mechanical Engineering (Design)				
Year 4 PT - SCQF 10				
MHH330274	Mechanical Engineering Research Project	4	40	100% CW
MHH126675	Simulation for Design and Manufacture	4	20	100% CW
MHH122359	Engineering Design & Analysis 4	4	20	30% CW, 70% EX
MHH123523	Computer Aided Design 2	4	20	100%CW
OPTIONS (Choose 1 from 2)				
MHH323630	Design Process, Assembly and Manufacture	4	20	50% CW, 50% EX
MHH323524	Renewable Energy Equipment Design	4	20	30% CW, 70% EX
Exit with BEng (Honours) Degree in Mechanical Engineering (Design)				

Mechanical Engineering PT – Systems BEng

Year 1 PT - SCQF 7				
Module Code	Module Title	Level	Credits	Assessment Method
M2H720058	Manufacture & Materials 2	2	20	50% CW, 50% EX
M2H323512	Thermodynamics & Fluid Mechanics	2	20	30% CW, 70% EX
M1H323563	Engineering Mathematics	1	10	30% CW, 70% EX
M2H624585	Electrical Distribution Systems	2	10	50% CW, 50% EX
M2H721926	Engineering Design and Analysis 2	2	20	30% CW, 70% EX
Exit with CertHE Certificate of HE in Engineering				
Year 2 PT - SCQF 8				
M2H326684	Mathematics 2	2	20	50% CW, 50% EX
M3H721406	Manufacture & Materials 3	3	20	30% CW, 70% EX

M2H622325	Control and Instrumentation Systems	2	20	30% CW, 70% EX
M3J923150	Energy Conversion Technologies	3	20	30% CW, 70% EX
Exit with DipHE Diploma of HE in Mechanical Engineering				
Year 3 PT - SCQF 9				
M3H606414	Control Engineering 3	3	20	30% CW, 70% EX
M3H120320	Engineering Design & Analysis 3	3	20	30% CW, 70% EX
M3H723623	Engineering Operations Management	3	20	30% CW, 70% EX
M3H623554	Integrated Engineering Studies 3	3	20	100% CW
Exit with BEng Degree in Mechanical Engineering (Systems)				
Year 4 PT - SCQF 10				
MHH330274	Mechanical Engineering Research Project	4	40	100% CW
MHH113285	Computer Aided Engineering	4	20	100% CW
MHH122359	Engineering Design & Analysis 4	4	20	30% CW, 70% EX
MHH323630	Design Process, Assembly and Manufacture	4	20	50% CW, 50% EX
OPTIONS (Choose 1 from 2)				
MHH622747	Control Engineering 4	4	20	30% CW, 70% EX
MHH323524	Renewable Energy Equipment Design	4	20	30% CW, 70% EX
Exit with BEng (Honours) Degree in Mechanical Engineering (Systems)				

Notes

1. **The second year of the part-time programme has an uneven split of credits with 30 credits in Trimester A and 50 credits in Trimester B.**
2. **The Fifth year of the MEng programme is specifically designed for full-time undergraduate students. It is the intention, by design, that Part-time students would exit the BEng(Hons) programme and enrol on the equivalent professional body accredited MSc programme by part-time mode of study to enable completion of the Academic Requirements for CEng registration under UK_SPEC.**

[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

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[3]:

Certificate of Higher Education in Mechanical Engineering- *achieved upon successful completion of 120 credits*

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

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

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

Master of Engineering in Mechanical Engineering - *achieved upon successful completion of 600 credits*

8. 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: www.gcu.ac.uk/aboutgcu/supportservices/qualityassuranceandenhancement/regulationsandpolicies

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:
Details: See section 5.1.1

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	Transferred to new PSP template	Mar 2026	Sept 2026

[3] 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.