

**University of the West of Scotland**  
**Undergraduate Programme Specification**

**Session:** 2024/25

1	<b>Named Award Title:</b>	BEng (Hons) Engineering Design and Manufacture (Single)	
2	<b>Award Title for Each Award:</b>	BEng (Hons) Engineering Design and Manufacture BEng Engineering Design and Manufacture Dip HE Engineering Cert HE Engineering Science	
3	<b>Date of Validation / Approval:</b>	March 2019	
4	<b>Details of Cohorts Applies to:</b>	All cohorts entering from Sept 2024	
5	<b>Awarding Institution/Body:</b>	University of the West of Scotland	
6	<b>Teaching Institution:</b>	University of the West of Scotland	
7	<b>Language of Instruction &amp; Examination:</b>	English	
8	<b>Award Accredited By:</b>	N/A	
9a	<b>Maximum Period of Registration:</b>	5 Years <a href="https://www.uws.ac.uk">Authorised Interruption Guidance notes (uws.ac.uk)</a>	
9b	<b>Duration of Study:</b>	Full Time – 4 years;	
10	<b>Mode of Study:</b>	Full Time	
11	<b>Campus:</b>	Paisley	
12	<b>School:</b>	School of Computing, Engineering and Physical Sciences	
13	<b>Programme Board:</b>	Engineering	
14	<b>Programme Leader:</b>	Dr Muhammad Ayat	

**15. Admission Criteria**

Candidates must be able to satisfy the general admission requirements of the University of the West of Scotland as specified in Chapter 2 of the University Regulatory Framework together with the following programme requirements:

**SQA National Qualifications:**

Standard Entry Requirements: BCCC (90 UCAS Tariff points) including Higher Mathematics, plus SQA National 5 Physics (Grade B, or above)

Minimum Entry Requirements: CCCC (84 UCAS Tariff points) including Mathematics, plus National 5 Physics at B

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**or GCE**

CCD (88 UCAS Tariff Points) including Maths and Physics

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**or SQA National Qualifications/Edexcel Foundation**

An appropriate Foundation Apprenticeship, Modern Apprenticeship or HNC/D award with the level of entry and/or credit awarded being subject to the content of the programme.

For Advanced Entry apprentices are required to have completed a relevant MA or have a minimum of 1 year of sector specific work experience at a level equivalent to the point of entry.

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**Other Required Qualifications/Experience**

Considering the relevance of the programmes to industry, applicants can apply for admission based on Accreditation of Prior Learning / Accreditation of Prior Experiential Learning in accordance with the University's RPL guidelines.

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**Further desirable skills pre-application (i.e. to satisfy additional PSRB requirements or other)**

It is a requirement that the applicant is employed by a company able and committed to supporting the Work Based aspects of the programme and has the right to live and work in Scotland.

<p><b>16</b></p>	<p><b>General Overview</b></p> <p>The Graduate Apprenticeships in Engineering Design and Manufacture is a work-based learning programme and has been developed in partnership between Industry, the education sector and Skills Development Scotland in support of the Skills Investment Plan, to ensure that graduate learning is wholly aligned to industry need. This Graduate Apprenticeship (GA) provides a new way into degree-level study for individuals who are currently employed, or who want to go straight into work from school. Employees can equip themselves with higher levels of academic learning and industry accreditation, which helps them progress as professionals. By investing in their staff through apprenticeships, employers can develop their workforce and support staff to develop their skills to industry and professional standards. Apprentices can directly apply their academic learning to real-life situations. Individuals who participate in the apprenticeship are able to access the same learning opportunities as those who follow the traditional route of direct entry into university.</p> <p>This programme is based on a framework produced by Skills Development Scotland (SDS). Engineering Design &amp; Manufacture is a highly skilled sector which has been identified by SDS as a priority for development of a Graduate Apprenticeship. This GA offers employers and employees the opportunity to up-skill and gain an Honours degree whilst employed. The Graduate Apprenticeship in Engineering Design and Manufacture provides apprentices with the knowledge, understanding and skills required to be a successful professional in a wide variety of engineering careers including engineering design, manufacturing and consultancy, operations and project management.</p> <p>This programme has been designed to fully embrace the Principles of Work Based Learning as identified by SDS in the tender invitation. Work-based learning and work-based assessment will be used to make use of workplace tasks that the apprentice undertakes. The programme will be delivered over four years with apprentices undertaking 120 credits per year over three trimesters.</p> <p>Apprentices who graduate with an honour's degree will be eligible to proceed to advanced Masters programmes in engineering or to undertake research via MPhil/PhD</p>
<p><b>17</b></p>	<p><b>Graduate Attributes, Employability &amp; Personal Development Planning</b></p> <p>UWS' Graduate Attributes focus on academic, personal and professional skills and throughout the programmes that these skills develop graduates who are universally prepared, work-ready and successful. The Engineering and Manufacturing Graduate Apprentice programme provides opportunities throughout the levels to enable these skills to be developed and focussed appropriately.</p> <p>The apprentices on this programme will all be in relevant employment therefore the programme will build on their existing employability skills.</p> <p>The Graduate Apprentices (GAs) will be productive members of their companies from an early stage. Their learning will be embedded with their workplace activities and their learning and skills are applied in a professional environment right from day one.</p>

As the GA progresses through the course, they will gain a higher level of understanding of academic learning in a workplace environment. Their learning will be applied to their workplace environment rather than theoretical or artificial.

The GA will develop their critical thinking skills, creativity and leadership skills within the workplace environment. It is expected that they will become change agents.

The GAs will be able to reflect on their work and develop their skills through their workplace experiences. GAs will have the confidence and qualifications needed to succeed when they graduate and beyond. GAs will be uniquely placed to integrate their academic skills, knowledge and practice with workplace practice. GAs will be fully billable professionals, integrated into the professional environment on graduation. GAs will have an understanding of the broader profession.

The programme offers a thorough grounding in the principles of engineering design and the underpinning analysis as well as manufacturing engineering and materials science and develops the lifelong learning skills that apprentices will need to stay abreast of the rapidly evolving technologies in engineering.

Every apprentice will have an academic/link tutor and workplace mentor to support them. The apprentice will have regular meetings with their academic/link tutor and mentor to discuss their progress including issues relating to PDP as well as their development goals and aspirations.

There are work-based learning modules at each level of the programme which encourage the apprentice to reflect on their personal development and they are expected to use an e-portfolio to record their PDP.

Mechanical Engineering knowledge is assembled throughout the programme and wherever possible digital literacy skills and ability to provide effective solutions is enhanced utilising industry standard appropriate technologies such as MATLAB, MATHCAD, CAD, FEA and Digital manufacturing software.

Particularly, but not exclusively, in later years of the programme, critical analytical and inquiry skills are developed and used to solve industry related problems in modules such as Design, Prototyping and Testing and Design and Applications.

The programme promotes cultural awareness and emotional intelligence with a variety of group exercises developing resilient, ambitious and enterprising leadership qualities whilst ensuring that group members are emotionally, and culturally aware and respectful communication and behaviours are the norm.

Commercial awareness is linked to mechanical design activities during the programme ensuring that costs associated with staff, materials, manufacture, in-service and decommissioning are considered when developing transformational/innovative solutions with commercial potential.

Ethical awareness and social responsibility is developed throughout and is formalised in final year project studies where School/University ethical approval is sought if required.

Links to current University and programme research are promoted through the programme with opportunities for students to become involved in aspects of the research from the earliest opportunity either discretely or as part of an assessment.

#### **PDP and Employability**

Across the programme of study, the Personal Development Planning (PDP) process gives the opportunity for engagement of students with a set of core activities, which include

- reflection on prior experience, personal attributes and goals;
- audits of skills and feedback on their development;
- opportunities and guidance on the recording of achievements;
- the identification/development of learning goals;
- opportunities to reflect on this material and to gain feedback;
- opportunities (and guidance) on presentation of evidence for different audiences and planning of future
- learning and career development (such as CVs);
- maintaining an effective PDP record.

The School has set up a group to co-ordinate and improve the effectiveness of the delivery of PDP and students are encouraged to maintain an effective PDP record using e-portfolios.

The programme and programme specification has been reviewed and updated taking cognisance of the University's Curriculum Framework principles as discussed below.

#### **Student Centred**

Reflection on learning is inherent and credit bearing in all years of the programme. Advanced entry to the programme is available where RPL/CPD/informal learning is evidenced. Access to student support (programme team, peers and wider University student services) is promoted at induction, through personal tutoring/year/programme leader, group activity in all levels of the programme, SCQF Level appropriate employability and careers sessions and within modules evident in entry level of the programme. Engagement and progress is monitored by module coordinators, this takes the form of VLE analytics, assessment engagement, on-campus activity engagement and formative and summative assessment engagement. Monthly meetings with year leads and programme leads allows the programme teams to respond appropriately and quickly both from a student and programme learning, teaching and assessment perspective. Co-creation of curriculum is challenging due to the need to demonstrate that Engineering Council learning outcomes are met by all students. However, within a number of modules students can determine the direction of their learning with boundaries set to ensure the assessment is fit for purpose. [1]

#### **Programme Delivery**

Delivery of the programme is by on-campus lectures, tutorials, laboratory and group work activity. The timetables are produced to ensure on-campus learning time is efficiently maximised.

#### **Simple and Coherent**

The programme has multiple exit award points as demonstrated in the programme specification and students are supported/counselled appropriately by the programme

	<p>leader after examiners' panels. Programme teams are aware of the programme learning outcomes through ongoing programme development meetings. The importance of the modular outcomes and assessment approaches on the overall programme outcomes and Engineering Council's learning outcomes, student feedback and sustainability are core to the discussions at these meetings. Students are made aware of the programme learning outcomes at induction, module introductions and programme development workshops. A capstone module is present at L10- Final Year Project. Assessment, wherever possible, follows real-world activities examination is required as part of the accreditation requirements however this follows an open-book approach providing time-bound, individually assessed, unfamiliar problems- assessing content and developing a number of important meta-skills. All modules have inherent tutorial activity with formative assessment providing concurrent feedback allowing implementable feed-forward. Academic accreditation is the mark of assurance that individual engineering programmes within higher education meet the required overall standards set by the engineering profession and defined by the Engineering Council (EngC). The programme prepares students for a career in engineering and the content is guided and evaluated by the Engineering Councils Standard for Professional Engineering Competence and Commitment. Meta-skills are embedded in the programme as is required by the Engineering Council and these include digital skills, creativity, critical thinking, innovation, and entrepreneurship and social enterprise. Students are assessed in a variety of ways and settings including, practical, written, oral, time-bound, group, real-world environment, creative, critical thinking and this broad approach to assessment provides a number of transferrable skills to be developed whilst assessing.</p> <p><b>Inclusivity</b></p> <p>The programme team have reviewed the content of the AdvanceHE Anti-Racist Curriculum Project [2] and are aware that in this regard 'curricular reform is a continual process rather than a final destination'. With this in mind, further institutional guidance is welcomed to ensure that every effort has been made to safeguard that the curriculum is and will continue to be anti-racist and inclusive for all. Sustainability Wherever possible modules are shared with other engineering programmes to maximise efficiency with specific programme contextualised components of learning, teaching and assessment. All modules have been reviewed to ensure they meet the norms around contact hours.</p> <p>[1]- <a href="https://www.uws.ac.uk/media/6564/assessment-handbook-2023-24.pdf">https://www.uws.ac.uk/media/6564/assessment-handbook-2023-24.pdf</a></p> <p>[2]- <a href="https://www.advance-he.ac.uk/anti-racist-curriculum-project">https://www.advance-he.ac.uk/anti-racist-curriculum-project</a></p>
18	<p><b>Work Based Learning/Placement Details</b></p> <p>The programme embraces the principles of Work Based Learning (WBL) throughout. There are 40 credits of WBL at each level, and a further 40 credits of work-based modules at each level, which incorporate both distance and work-based learning and assessment. In addition, many University delivered core modules will include some elements of Work based Assessment. Each employer will have different capabilities in supporting the broad range of WBL opportunities, but it is anticipated that apprentices in an organisation with both design and manufacturing capability may undertake most of their learning and assessment in the workplace.</p> <p>Coordination of the WBL and the University delivered and assessed content will be undertaken through an Individual Learning Plan developed in partnership between the employer, the apprentice and the University each year. The ILP is the key document in</p>

	<p>planning and monitoring the apprentice's journey. The ILP requires active input from the apprentice and is embedded as a credit bearing part of the WBL at each level, and as part of the Industrial Project at level 10.</p>
<b>19</b>	<p><b>Attendance and Engagement</b></p> <p>In line with the <a href="#">Student Attendance and Engagement Procedure</a>, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the Library and on the VLE, and complete assessments and submit these on time.</p> <p>For the purposes of this programme, academic engagement equates to the following:</p> <p>Students are expected to attend all timetabled sessions and to engage with all formative and summative assessment elements of all the modules that are included in the programme specification as core modules as well as any optional module when applicable.</p>
<b>20</b>	<p><b>Equality and Diversity</b></p> <p>The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: <a href="#">UWS Equality, Diversity and Human Rights Code</a>.</p> <p>Please detail any specific arrangements for this programme. This should be considered and not just refer the reader to the UWS Equality and Diversity policy.</p> <p>Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. Specialist assistive equipment, support provision and adjustment to assessment practice in accordance with the University's policies and regulations. More information on the University's EDI policies can be accessed at: <a href="https://www.uws.ac.uk/about-uws/uws-commitments/equality-diversity-inclusion/">https://www.uws.ac.uk/about-uws/uws-commitments/equality-diversity-inclusion/</a> (N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School).</p>

Programme structures and requirements, SCQF level, term, module name and code, credits and awards ( [Chapter 1, Regulatory Framework](#) )

<b>21</b>	<b>Learning Outcomes (Maximum of 5 per heading)</b>	
	Outcomes should incorporate those applicable in the relevant QAA Benchmark statements.	
	<b>SCQF LEVEL 7</b>	
	<b>Learning Outcomes (Maximum of 5 per heading)</b>	
<b>Knowledge and Understanding</b>		
<b>A1</b>	Describe and explain key areas of manufacturing and design engineering, and its underpinning science and mathematics.	
<b>A2</b>	Define and discuss introductory principles and contexts with respect to multi-disciplinary and work-based aspects of engineering.	
<b>A3</b>	Describe and explain relevant materials, equipment and processes and technologies underpinning the design and manufacturing activity.	
<b>Practice - Applied Knowledge and Understanding</b>		
<b>B1</b>	Apply appropriate quantitative science and engineering and mathematical tools to solve given problems.	
<b>B2</b>	Apply acquired knowledge and understanding and practical engineering skills in class and laboratory as well as workplace contexts.	
<b>B3</b>	Apply graphical and textual tools in communicating technical information in class and workplace contexts	
<b>Communication, ICT and Numeracy Skills</b>		
<b>C1</b>	Communicate complex ideas both verbally and in writing.	
<b>C2</b>	Present and evaluate coherent arguments, information and ideas in a clear and appropriate manner.	
<b>C3</b>	Employ a range of approaches to addressing defined and/or routine problems and issues in engineering design and manufacturing in the workplace.	
<b>C4</b>	Reflect on the experience of applying their knowledge and understanding of the engineering sector in a workplace environment.	
<b>C5</b>	Select and use appropriate basic and routine tools and techniques to process a variety of information and data.	
<b>Generic Cognitive Skills - Problem Solving, Analysis, Evaluation</b>		
<b>D1</b>	Apply appropriate quantitative science and engineering tools to basic problems.	
<b>D2</b>	Coherently present and evaluate arguments, information and ideas.	



<b>Autonomy, Accountability and Working With Others</b>	
<b>E1</b>	Define and explain key issues in relation to their work, and be able to give an account of, the accountability and responsibilities of computer professionals and their accountability to their clients, the community, and society at large.
<b>E2</b>	Manage limited resources within defined areas of the engineering workplace.
<b>E3</b>	Take account of own and others' roles and responsibilities in carrying out and evaluating engineering tasks in the workplace.

### Learning Outcomes - Level 7 Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
7	ENGG07002	Applied Engineering Science	20		✓		
7	ENGG07017	WBL1: Introduction to Engineering	40	✓	✓		
7	ENGG07001	Engineering Mechanics	20		✓		
7	ENGG07004	Technical Communications	20	✓			
7	NEW	Applied Mathematics 1	20	✓			

Footnotes for Core Modules:

N/A
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### Learning Outcomes - Level 7 Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	

Footnotes for option modules

N/A
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<b>22 a</b>	<b>Level 7 Criteria for Progression and Award</b>
	<p>Apprentices may be given an ongoing decision where all learning outcomes from a module have not been completed due to linked work-based learning or assessment activities not being scheduled during the delivery period of the module.</p> <p>Apprentices having been given an “ongoing” decision in any module due to incomplete work-based assessment, may count that module’s credit towards progression (but NOT award) provided the programme leader can confirm:</p> <ul style="list-style-type: none"> <li>• that the required work-based activities are scheduled to allow the outstanding Work Based Assessment to be completed within the next academic year.</li> <li>• That the apprentice is currently on schedule with the activities in their Individual Learning Plan and is receiving satisfactory reports from both employer and academic site visits.</li> </ul> <p>This is limited to a maximum of 40 credits, and must be cleared within one year. Apprentices at a particular level are required to achieve all credits in the previous level before progressing to the next. If the required work-based activity has not been scheduled within one year, then a University based alternative activity should be used.</p> <p>Refer to Regulation 3.13 regarding progression with credit deficit, note, the decision to permit a proceed with carry is not automatic but is subject to detailed discussion at the programme award board.</p> <p>Students obtaining 120 credits at SCQF 7 or above, with 100 from the programme are eligible for the exit award of the Certificate of Higher Education in Engineering Science.</p> <p>Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 &amp; 3.26)</p> <p>Links: <a href="#">UWS Regulatory Framework</a>; and <a href="#">Student Experience Policy Statement</a>.</p>

	<b>Level 8 Learning Outcomes (Maximum of 5 per heading)</b>
<b>Knowledge and Understanding</b>	
<b>A1</b>	Define and explain the concepts and principles of mechanical engineering in the design and analysis of engineering applications.
<b>A2</b>	Identify and describe the different types and characteristics of engineering materials
<b>A3</b>	Identify and describe the different types and characteristics of manufacturing processes
<b>A4</b>	Demonstrate an intellectual understanding of, and an appreciation of basic management theory and relevant issues

<b>Practice - Applied Knowledge and Understanding</b>	
<b>B1</b>	Select appropriate materials and manufacturing methods for given scenarios
<b>B2</b>	Determine the appropriate method of manufacture for an engineering component
<b>B3</b>	Use a range of routine and advanced skills in the application and use of computer aided design software
<b>B4</b>	Use relevant engineering tools, equipment and techniques in workplace and laboratory situations
<b>Communication, ICT and Numeracy Skills</b>	
<b>C1</b>	Develop and communicate design ideas through the use of 3D modelling software
<b>C2</b>	Communicate engineering ideas and concepts through the use of presentation software
<b>C3</b>	Employ routine and specialised software to analyse engineering data.
<b>C4</b>	Employ a range of basic and some advanced engineering and mathematical analysis techniques in the solution of engineering problems in university and work place environment.
<b>Generic Cognitive Skills - Problem Solving, Analysis, Evaluation</b>	
<b>D1</b>	Employ appropriate quantitative science and engineering tools to the analysis of basic engineering problems.
<b>D2</b>	Demonstrate the ability to monitor, interpret and apply the results of analysis and modelling.
<b>D3</b>	Employ a range of approaches to formulate evidence-based solutions/ responses to defined and/or routine problems/issues associated with the workplace.
<b>D4</b>	Critically evaluate and analyse evidence-based solutions/responses to defined and/or routine problems/ issues associated with the workplace.
<b>Autonomy, Accountability and Working With Others</b>	
<b>E1</b>	Work as a member of a team, taking account of own and others' roles, responsibilities and contributions in carrying out and evaluating tasks as a student and an employee.
<b>E2</b>	Manage resources within defined areas of work as agreed by WorkPlace Mentor.
<b>E3</b>	Deal with ethical and professional issues in accordance with current professional and/or ethical codes or practices in the discipline of engineering under guidance.
<b>E4</b>	Identify and apply current professional and/or ethical codes or practices in the discipline of engineering under guidance of the WorkPlace Mentor.

### Learning Outcomes - Level 8 Core Modules

SCQF Level		Module Name	Credit	Term	Footnotes
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	Module Code			1	2	3	
9	ENGG09056	Computer Aided Design 1	20	✓			
8	ENGG08030	Introductory Management for Engineers	20	✓			
8	WRKB08001	WBL 2 - Work based Learning (40 Point)	40	✓	✓		
8	ENGG08017	Design Analysis 1	20		✓		
8	ENGG08001	Materials and Contemporary Manufacturing	20		✓		

**Footnotes for Core Modules:**

N/A
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**Learning Outcomes - Level 8 Optional Modules**

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	

**Footnotes for option modules**

N/A
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<b>22b</b>	<b>Level 8 Criteria for Progression and Award</b>
	<p>To progress from SCQF 8 to SCQF 9 in this programme, students are normally required to obtain 240 credits from the above programme.</p> <p>Refer to Regulation framework 3.13 regarding progression with credit deficit, note, the decision to permit a proceed with carry is not automatic but is subject to detailed discussion at the programme award board.</p> <p>Apprentices may be given an ongoing decision where all learning outcomes from a module have not been completed due to linked work-based learning or assessment activities not being scheduled during the delivery period of the module.</p> <p>Apprentices having been given an “ongoing” decision in any module due to incomplete</p>

work-based assessment, may count that module's credit towards progression (but NOT award) provided the programme leader can confirm:

- that the required work-based activities are scheduled to allow the outstanding Work Based Assessment to be completed within the next academic year.
- That the apprentice is currently on schedule with the activities in their Individual Learning Plan and is receiving satisfactory reports from both employer and academic site visits.

This is limited to a maximum of 40 credits, and must be cleared within one year. Apprentices at a particular level are required to achieve all credits in the previous level before progressing to the next. If the required work-based activity has not been scheduled within one year, then a University based alternative activity should be used.

Students obtaining 240 credits of which 100 are at SCQF 8 or above from the programme are eligible for the exit award of the Diploma of Higher Education in Engineering.

Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 & 3.26)

Links: [UWS Regulatory Framework](#); and [Student Experience Policy Statement](#).

<b>SCQF LEVEL 9 Learning Outcomes (Maximum of 5 per heading)</b>	
<b>Knowledge and Understanding</b>	
<b>A1</b>	Demonstrate an integrated knowledge and understanding of engineering and project management and execution.
<b>A2</b>	Demonstrate a critical understanding of the concepts and limitations of the Finite Element Analysis technique when applied as a design tool
<b>A3</b>	Analyse theories, principles, concepts and terminology associated with engineering design and manufacturing applicable to the individual's workplace.
<b>A4</b>	Demonstrate a critical understanding of the scope, main areas and boundaries of the studied engineering themes
<b>Practice - Applied Knowledge and Understanding</b>	
<b>B1</b>	Apply engineering design principles to a broad spectrum of engineering components and systems.
<b>B2</b>	Practise routine methods of enquiry and research associated with engineering design and manufacturing.
<b>B3</b>	Apply a range of design and engineering principles to development of design/s from concept to advanced prototypes.
<b>Communication, ICT and Numeracy Skills</b>	
<b>C1</b>	Use a range of software tools to support engineering development techniques and project management in the work place.
<b>C2</b>	Use project management software as a planning tool to improve the probability of completing a project on time and within budget and to communicate project requirements.
<b>Generic Cognitive Skills - Problem Solving, Analysis, Evaluation</b>	
<b>D1</b>	Understand and apply a range of engineering concepts, principles and practices in the context of well specified scenarios, exercising judgement in the selection of tools and techniques.
<b>D2</b>	Draw on a range of academic and industrial sources in making judgements.
<b>Autonomy, Accountability and Working With Others</b>	
<b>E1</b>	Recognise and deal with the professional, economic, social, environmental, moral and ethical issues involved in sustainably undertaking engineering activities, and be guided by the adoption of appropriate professional, ethical and legal practices in the workplace.
<b>E2</b>	Use initiative in managing ethical and professional issues in accordance with current professional and/or ethical codes or practices, seeking guidance where appropriate from workplace Mentor.

### Learning Outcomes - Level 9 Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
9	ENGG09011	Analysis & Simulation 1	20		✓		
9	ENGG09021	Design & Applications	20	✓			
9	ENGG09001	Design Prototyping & Testing	20		✓		
9	ENGG09020	Design Analysis 2	20	✓			
9	ENGG09050	WBL 3: Project Management	40	✓	✓		

Footnotes for Core Modules:

N/A

### Learning Outcomes - Level 9 Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	

Footnotes for option modules

N/A

22c	<p><b>Level 9 Criteria for Progression and Award</b></p>
	<p>Students obtaining 360 credits from the above programme (with a minimum of 100 at SCQF L9) are eligible for the exit award of BEng Engineering Design and Manufacture.</p> <p>Any student who has completed 360 credit points, 300 being in Engineering, and not as laid out above, may be entitled to exit with BSc Engineering Design and Manufacture, at the discretion of the SBE.</p> <p>Refer to Regulation 3.14 regarding progression with credit deficit. Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 &amp; 3.26)</p> <p>Apprentices may be given an ongoing decision where all learning outcomes from a module have not been completed due to linked work-based learning or assessment activities not being scheduled during the delivery period of the module.</p> <p>Apprentices having been given an “ongoing” decision in any module due to incomplete work-based assessment, may count that module’s credit towards progression (but NOT award) provided the programme leader can confirm:</p> <ul style="list-style-type: none"> <li>• that the required work-based activities are scheduled to allow the outstanding Work Based Assessment to be completed within the next academic year.</li> <li>• That the apprentice is currently on schedule with the activities in their Individual Learning Plan and is receiving satisfactory reports from both employer and academic site visits.</li> </ul> <p>Links: <a href="#">UWS Regulatory Framework</a>; and <a href="#">Student Experience Policy Statement</a>.</p>



<b>SCQF LEVEL 10</b> <b>Learning Outcomes (Maximum of 5 per heading)</b>	
<b>Knowledge and Understanding</b>	
<b>A1</b>	Demonstrate a detailed and innovative knowledge and understanding in the integration of a range of design and / or manufacturing techniques through academic and industrial project activity
<b>A2</b>	Demonstrate a detailed knowledge and understanding of design and manufacturing principles and apply them to the development of a product, component, system or process
<b>A3</b>	Demonstrate a critical understanding of the principal theories, concepts and principles conventions within the selected theme(s) of study, some of which are informed by or at the forefront of the selected theme(s) of study
<b>A4</b>	Demonstrate knowledge and understanding of engineering design and / or manufacture including a range of established techniques of enquiry or research methodologies.
<b>Practice - Applied Knowledge and Understanding</b>	
<b>B1</b>	Execute a defined project of research, development or investigation within engineering and identify and implement relevant outcomes.
<b>B2</b>	Critically review and assess contributions to the research literature of relevant areas of engineering.
<b>B3</b>	Use a range of the principal skills, practices and/or materials associated within the selected theme(s) of study in a project linked to the workplace.
<b>B4</b>	Use and integrate skills, practices and/or materials which are specialised, advanced, or at the forefront of engineering design and / or manufacture.
<b>Communication, ICT and Numeracy Skills</b>	
<b>C1</b>	Deliver a coherent and reflective presentation of an extended piece of project work to an informed audience.
<b>C2</b>	Produce a critical and evaluative written report of an engineering project.
<b>C3</b>	Use a wide range of routine and specialised skills in support of established practices within the selected theme(s) of study - for example: <ul style="list-style-type: none"> <li>- make formal presentations about specialised topics to informed audiences</li> <li>- use a range of engineering software and techniques to support and enhance work at this level and specify refinements/ improvements to engineering components or systems</li> <li>- interpret, use and evaluate a range of numerical and graphical data to set and achieve goals/ targets.</li> </ul>
<b>Generic Cognitive Skills - Problem Solving, Analysis, Evaluation</b>	
<b>D1</b>	Critically analyse and apply a range of engineering concepts, principles and practices in the context of loosely defined problems where information

	is limited and/or conflicting and/or comes from a range of sources, exercising judgement in the selection of tools and techniques.
<b>D2</b>	Critically review and consolidate knowledge, skills and practices and thinking within the selected theme(s) of study.
<b>D3</b>	Demonstrate originality and creativity in dealing with professional level engineering issues.
<b>Autonomy, Accountability and Working With Others</b>	
<b>E1</b>	Practise in ways which show a clear awareness of own and others' roles and responsibilities in the workplace.
<b>E2</b>	Deal with complex ethical and professional issues in accordance with current professional and/or ethical codes or practices in the workplace.

### Learning Outcomes - Level 10 Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
10	ENGG10086	Design for Manufacturing Processes	20		✓		
10	ENGG10010	Manufacturing Systems Engineering	20		✓		
10	ENGG10042	WBL 4 - Applied research project	40	✓	✓		
10	ENGG10019	Analysis & Simulation 2	20	✓			
11	QUAL11020	Managing Quality	20	✓			

Footnotes for Core Modules:

N/A
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### Learning Outcomes - Level 10 Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	

Footnotes for option modules

N/A

<b>22d</b>	<b>Level 10 Criteria for Award</b>
	<p>To be eligible for the award of BEng Honours degree a candidate must hold 480 credits, including 120 at SCQF 10/11 from the above programme.</p> <p>The Classification of Honours will be determined by University Regulation framework 3.20-3.24</p> <p>No Distinction is awarded at Honours level (Regulation 3.25).</p> <p>Links: <a href="#">UWS Regulatory Framework</a>; and <a href="#">Student Experience Policy Statement</a>.</p>

<b>23</b>	<b>Regulations of Assessment</b>
	<p>Candidates will be bound by the general assessment regulations of the University as specified in the <a href="#">University Regulatory Framework</a> .</p> <p>An overview of the assessment details is provided in the Student Handbook and the assessment criteria for each module is provided in the module descriptor which forms part of the module pack issued to students. For further details on assessment please refer to Chapter 3 of the Regulatory Framework.</p> <p>To qualify for an award of the University, students must complete all the programme requirements and must meet the credit minima detailed in Chapter 1 of the Regulatory Framework.</p>
<b>24</b>	<b>Combined Studies</b>
	<p>There may be instances where a student has been unsuccessful in meeting the award criteria for the named award and for other more generic named awards existing within the School. Provided that they have met the credit requirements in line with the SCQF credit minima (please see Regulation 1.21), they will be eligible for a Combined Studies award (please see Regulation 1.61).</p> <p>For students studying BA, BAcc, or BD awards the award will be BA Combined Studies.</p> <p>For students studying BEng or BSc awards, the award will be BSc Combined Studies.</p>

## **Change/Version Control**

### **Changes made to the programme since it was last published:**

**Created on 16/05/17**

**07/05/19**

The exit award for this programme for L7 and L8 as:  
Cert HE Engineering Science  
Dip HE Engineering

level 7

ENGG07017 WBL1 Introduction to Engineering replaces WRKB07001 Work based learning 1

level 8

GRLA08007 Negotiated learning suspended

GRLA08006 Negotiated learning suspended

level 9

GRLA09007 Negotiated learning suspended

WBL3 Project management (no code at the moment) replaces WRKB09001 Work based learning 3

level 10

ENGG10048 WBL4 Applied research project replaces WRKB10001 WBL4 Industrial project

ENGG10008 Engineering Management 2 deleted from the options

ENGG10018 Advanced Design deleted from the options

**30/04/20**

changes: Level 9 Design Engineering Application suspended and replaced with Design Prototyping and Testing

Regulations updated

**22/04/21**

Details of cohorts applies to updated to September 21

Admissions criteria updated according with the other engineering programmes

Level 7:

GRLA07004 Introduction to Engineering Design 40 credits replaced by ENGG07001

Engineering Mechanics 20 credits and ENGG07002 Applied Engineering Science 20 credits

learning outcomes not affected by the changes

Level 8

GRLA08008 Project Management 10 credits and GRLA08009 Engineering Management 10 credits replaced by ENGG08030 Introductory Management for Engineers 20 credits

GRLA08004 Engineering Design Analysis 40 credits replaced by ENGG08017 Design

Analysis 20 credits and ENGG08002 Computer Design ANALYSIS 20 credits

GRLA08005 Materials and process selection 20 credits replaced by ENGG08001 Materials and Manufacture

learning outcomes not affected by the changes

Level 9

GRLA09005 Machine Design and simulation 40 credits replaced by ENGG09011 Analysis and Simulation 20 credits and ENGG09021 Design and Applications 20 credits

GRLA09006 Project management and manufacturing 20 credits replaced by ENGG09006 Engineering Management 1

learning outcomes not affected by the changes

GRLA09008 Negotiated learning suspended

Level 10

ENGG1000 Final Year project 40 credits replaced by QUAL11020 Managing Quality 20 credits and ENGG10019 Analysis and Simulation 2 20 CREDITS

Learning outcomes not affected by the changes

Criteria progression award (I7,L8, L9)

Students can carry over a deficit of 40 credits instead of 20 credits

**13/04/23**

Details of Cohorts Applies to: Changes applies to Sept 23 onwards

Programme Leader Updated to Dr Tony Leslie

Admissions criteria updated to reflect current requirements.

EDI text updated to reflect current institutional position.

Level 7

Mathematics for Engineering 1 (T1 & T2) added in lieu of Engineering Mathematics 1 (T1) & 2 (T2).

Level 8

Computer Aided Design 1 (T1) added in lieu of Computer Aided Design (T1)

Level 9

Design Analysis 2 (T1) added in lieu of Project Management (T1).

**5/6/24**

Section 4 - Details of Cohorts Applied to updated to All cohorts from Sept 2024.

Section 14 - Programme Leader updated to Dr Muhammad Ayat from Dr Tony Leslie

Section 15 - Admissions Criteria updated to reflect the current standard entry qualifications for 2025.

Section 17 - Assessment Handbook link updated to current form of this document.

Level 7 Modules:

(New Module Code) Applied Mathematics 1 (T1) replaces MATH07010-Mathematics for Engineering (T1 & T2).

ENGG07002 Applied Engineering Science delivery changed to T2 was T1 & T2.

Level 8 Modules:

ENGG08001 module title changed to Materials and Contemporary Manufacturing was Materials & Manufacture.

Level 10 Modules:

ENGG10086 Design for Manufacturing Processes replaces Computer Aided Manufacture CAM