University of the West of Scotland

Undergraduate Programme Specification

Session: 23/24
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Status: Draft / Published [click here to add detail]

1	**Named Award Title:**	**MEng (Hons) Chemical Engineering (Sandwich Available) Single**
2	**Award Title for Each Award: [1]**	**MEng (Hons) Chemical Engineering** **BEng (Hons) Chemical Engineering (Sandwich Available)** **BSc Chemical Engineering (Sandwich Available)** **Dip HE Engineering** **Cert HE Engineering Science**
3	**Date of Validation / Approval:**	November 2019
4	**Details of Cohorts Applies to:**	All those entering SCQF Levels 7, 8, 10 and 11
5	**Awarding Institution/Body:**	**University of the West of Scotland**
6	**Teaching Institution(s)[2]:**	**University of the West of Scotland** [click here to add detail]
7	**Language of Instruction & Examination:**	**English**
8	**Award Accredited By:**	CEng accreditation by the IChemE will be pursued in due course.
9a	**Maximum Period of Registration:**	7 years (including optional Sandwich placement) Authorised Interruption Guidance notes (uws.ac.uk)
9b	**Duration of Study:**	Full Time – X years; Part Time – X years; Placement (compulsory) – X years
10	**Mode of Study:**	Full Time Part Time
11	**Campus:**	Paisley
12	**School:**	School of Engineering and Computing
13	**Programme Board:**	Mechanical & Chemical Engineering
14	**Programme Leader:**	Mojtaba Mirzaeian

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:

[1] Include main award and all exit awards e.g. BA / BSc / BEng / DipHE / CertHE

[2] University of the West of Scotland and include any collaborative partner institutions involved in delivery.

SQA National Qualifications:

Grades A, B, B, B @ Higher including Mathematics and Physics

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or GCE
Grades B, B, B @ A level, including Mathematics and Physics.

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or SQA National Qualifications/Edexcel Foundation
HNC in Chemical Engineering or closely related subject with "B" in the graded unit provides entry to the BEng stream at Level 8. Transfer to the MEng programme is subject to performance at the end of the academic session.

HND in Chemical Engineering or closely related subject with "A" in the graded unit provides entry to the BEng stream at Level 9. Transfer to the MEng programme is subject to performance at the end of the academic session.

Other Required Qualifications/Experience

Applicants may also be considered with other academic, vocational or professional qualifications deemed to be equivalent.
A student shall be required to reapply for a programme of study if the PAB has not assigned credit to the student for a period of two calendar years. The student will be treated as a new applicant and will go through the University's RPL process to check on the currency of their knowledge. They will then be offered the most appropriate level of entry based on that knowledge. (Regulation 5.4.1b)

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

[click here to add detail]

16	**General Overview** The MEng in Chemical Engineering is a unique UK integrated masters taught programme that draws upon the industrial experience and research strengths of the University of The West of Scotland in Chemical Engineering and other engineering disciplines. It offers an advanced qualification for engineering students wishing to progress their career and develop an in-depth and practical understanding of Chemical Engineering in the chemical process industries such as food, petrochemicals, pharmaceuticals, energy, electronics, cosmetics, fine chemicals, etc. The content of the programme is both timely and is desired by industry both locally and globally. The MEng is intended to be completed in a minimum of 5 years period synchronised with the main undergraduate intake in September. The programme is designed to provide a sound fundamental knowledge of engineering and related enabling sciences, and the practical skills to operate successfully in the chemical industry in areas such as the pharmaceutical industry, energy industry, environmental sector, food industry, electronic industry, nuclear industry, as well as in academic research and teaching. Chemical engineering degrees at the university are recognised by employers as having a strong applied focus which is a good preparation for work in many industries. Professional skills are developed throughout the programme through practical and project work, problem solving activities with the aid of computer technology, group working, together with the analytical, numerical, management and communication skills which are expected of the modern engineer. The programme combines a strong academic content with the opportunity for direct, hands-on experience in the laboratory and during industrial placement with modern processing equipment and process design and analysis software. The programme includes an optional industrial placement which allows the development of additional skills and can enhance employability. Chemical Engineering covers a wide variety of theoretical, conceptual and practical areas, and requires its practitioners to display and exercise a range of knowledge and skills. Delivery of the programme therefore involves a diversity of teaching and assessment methods appropriate to the learning outcomes of the modules and of the overall programme, as indicated below: Lectures are used to present, discuss and evaluate subject matter and content. Tutorial work is closely integrated with the lecture material, and generally requires students to solve problems or otherwise to develop understanding of the materials presented. Investigations and case studies require students to gather, organise and evaluate numerical or non-numerical information, either individually or on a group basis (the latter specifically designed to develop team work skills). Most modules involve an element of practical work, to develop laboratory skills, to familiarise students with modern process equipment and experimental techniques and to enhance practical, analytical, investigative, evaluative and presentational skills. Assignments, investigations, laboratory results and other coursework require presentation in a variety of forms, developing skills in oral and written presentation and in the application of various forms of IT. The syllabus is designed to encourage enquiry and several modules use open ended problems to develop students' skills.
17	**Graduate Attributes, Employability & Personal Development Planning**

UWS' Graduate Attributes focus on academic, personal and professional skills and throughout the programmes that these skills develop competent and innovative graduates who are universally prepared, work-ready and successful (https://www.uws.ac.uk/current-students/your-graduate-attributes/).

Upon completing this programme the students will be equipped with tools that will help them in their journey to be work-ready, successful and universal.

The programme develops critical thinking and analytical skills that enhance the students' ability to deal with complicated issues and make them problem solvers. It encourages them to become motivated, innovative, autonomous, inquisitive, creative and imaginative.

The programme and the teaching approaches encourage collaborative working, effective communications, resilience and perseverance, and development of research and inquiry skills.

The aim is to produce graduates who are knowledgeable with excellent digital skills fit for the 21st century and aware of the global context in which they operate and the challenges that face humanity in the 21st century in the areas of water, food, energy, environment and well-being, who strive to lead, influence and dare to make transformational changes while being ethically-minded, socially responsible, critically aware of the environmental and social impacts of their decisions and actions, and culturally sensitive.

The chemical and process engineering knowledge is developed throughout the programme using a variety of means including direct contact, projects, research, simulation and other productivity software utilisation wherever possible. This allows the development of graduates who are continuous learners, adaptive, innovative and leaders with the requirements of the 21st century chemical and process industries.

Particularly, but not exclusively, in later years of the programme, critical analytical and inquiry skills are developed and used to solve industry related problems. Many of these are set in and constrained by consideration of engineering, safety, environmental protection, economics, and the over-arching regulatory frameworks for the chemical industry.

Projects and research activities are used to prepare designs and analyse problems where incisive and innovative solutions are required to be effectively presented as part of collaborative groups or as individual autonomous learning activities.

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 process design activities throughout the programme ensuring that costs associated with any process including capital costs, operating costs and/or decommissioning costs are evaluated and compared to other possible alternatives.

Ethical awareness and social responsibility are developed throughout as integral part of the programme. A total approach that considers impact on human, biota and the environment is followed.

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.

The operation of PDP (Personal Development Planning) is being addressed by a cross-School working group, with input from CAPD. At level 7 there will be a move away from a standalone module for PDP/transferable skills development, with the additional 24h contact that is available being used to deliver PDP/transferable skills through a series of timetabled tutorials. The aim of

	this structure is to enable students to become familiar with the ePortfolio that will be used, and to evaluate and identify their own range of skills and aspirations. Exercises used for PDP/transferable skills elements of provision will be drawn from mainstream modular provision, to ensure that there is a strong link between PDP and the curriculum. A similar pattern of operation will be adopted for later years. In all aspects of PDP, the emphasis will be on students taking personal responsibility for their PDP portfolio, with support from staff as appropriate to each level. The timetabled PDP sessions will be associated with the following core modules for the Chemical Engineering programme: Level 7: Term 1: Technical Communications in Engineering Term 2: Applied Engineering Science 2 Level 8: Term 1: Chemical Engineering Fundamentals Term 2: Process Modelling and Simulation Level 9: Term 1: Engineering Project Management Term 2: Process Design, Control and Safety Level 10: Term 1 & 2: Chem Eng Design Study Term 2: Process Dynamics and Control Level 11: Term 1 & 2: MEng Chem Eng Research Project
18	**Work Based Learning/Placement Details**
	The programme includes a thick based approach to Workplace learning which involves a year placement between third and fourth year. If a student completes at least 36 weeks of work placed learning the student is eligible for the ‘sandwich award’ title. The programme offers a 40 credit, Workplace Learning module which must be agreed and documented according to the module descriptor before the module can be undertaken.
19	**Attendance and Engagement**
	In line with the Student Attendance and Engagement Procedure, 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. For the purposes of this programme, academic engagement equates to the following: Attendance in lectures, tutorial sessions and all practical activities.
20	**Equality and Diversity**

	The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. 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. All students who wish to engage with study the programme will be treated equally with regard to existing Equality and Diversity Policies. No student will be refused admission to the programme solely on grounds of disability, but safety within classroom or laboratory environments is a priority and this may require special arrangements to be put in place. The School Special Needs coordinator and the University director of occupational health and safety are available to advise on such matters. The programme is open to all students regardless of race, religion, gender or sexual orientation. Regarding the sandwich placement, opportunities will normally be appropriate for any student and learners will only be placed with employers who have appropriate equal opportunity, health & safety and other relevant policies and procedures in place. Students will also only be placed in a job which the University is satisfied offers the student sufficient opportunities to meet the placement learning outcomes.

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

21	**Learning Outcomes (Maximum of 5 per heading)**
	Outcomes should incorporate those applicable in the relevant QAA Benchmark statements. Please ensure that Learning Outcomes are appropriate for the level of study. Further information is available via SCQF: https://scqf.org.uk/support/support-for-educators-and-advisers/support-for-colleges-heis/ and a Level Descriptors tool is available (SCQF Level Descriptors Tool | Scottish Credit and Qualifications Framework) and ensure appropriate cognisance of Chapter 1, Regulatory Framework. https://www.uws.ac.uk/media/6514/regulatory-framework-2023-2024.pdf

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	SCQF LEVEL 7 **Learning Outcomes (Maximum of 5 per heading)**
Knowledge and Understanding	
A1	Demonstrate a broad knowledge of chemical structures, reactions and equilibria
A2	Relate knowledge to chemical theories, concepts and principles
A3	Show an awareness of the evidence base for chemical science
A4	Show an awareness of the fundamentals of engineering sciences.

A5	Appreciate basic issues in health and safety at work. A6. Show an awareness of the different engineering materials and their properties. A7. Develop the ability of engineering and scientific problem solving using applied mathematics.
Practice - Applied Knowledge and Understanding	
B1	Apply basic knowledge and skills in solving routine problems in engineering and chemistry
B2	Demonstrate the practice of basic laboratory skills
B3	
B4	
B5	
Communication, ICT and Numeracy Skills	
C1	Tackle a range of numerical and non-numerical problems in theoretical and practical situations
C2	Present information in a variety of forms relevant to the context
C3	Obtain information and data from standard sources.
C4	Present and understand graphical depiction of information and engineering drawings
C5	
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Present and evaluate information and ideas in the handling of chemical and engineering issues
D2	Use a range of approaches to the solution of routine problems.
D3	
D4	
D5	
Autonomy, Accountability and Working With Others	
E1	Exercise some initiative in and take responsibility for defined activities
E2	Take supervision especially in unfamiliar laboratory situations
E3	Work with others in defined group exercises

E4	
E5	

Level 7 Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
7	ENGG07002	Applied Engineering Science	20	✓	✓		
7	CHEM07011	Chemistry & Reactions	20		✓		
7	ENGG07001	Engineering Mechanics	20		✓		
7	MATH07010	Mathematics for Engineering 1	20		✓		
7	CHEM07003	Structure of Chemistry	20	✓			
7	ENGG07004	Technical Communications	20	✓			

Footnotes for Core Modules:

[click here to add detail]

Level 7 Optional Modules

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

Footnotes for option modules

22 a	**Level 7** **Criteria for Progression and Award**
	In line with the Regulatory Framework, for the award of Higher Education Engineering Science, at least 120 credit points must be achieved of which a minimum of 100 are at SCQF Level 7 and none less than SCQF Level 7. Those students who achieve at least 120 credits of which a minimum of 100 are at SCQF level 7 required, shall be eligible for the Certificate in Higher Education Engineering Science. Progression to SCQF level 8 is subject to academic advice and module prerequisites. The decision to permit a proceed with carry is not automatic but is subject to detailed discussion at the programme award board. 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.

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	Level 8 **Learning Outcomes (Maximum of 5 per heading)**
Knowledge and Understanding	
A1	Demonstrate a broad knowledge of main areas of chemical engineering and develop understanding of the components of a chemical process facility and familiarity with the different equipment used in the process industry.
A2	Display an understanding of some major core theories and principles of engineering, mathematics and chemistry.
A3	Show some knowledge of major current issues pertaining to the process industry and appreciate the importance of safety, environmental protection and sustainability in chemical engineering context.
A4	Develop an appreciation of the basic issues related to chemical and process engineering.
A5	Development of knowledge and understanding of the mathematical principles underpinning chemical engineering and develop the ability to apply this knowledge to practical chemical engineering problems using process modelling and simulation.
Practice - Applied Knowledge and Understanding	
B1	Use a range of routine skills, techniques and practices in engineering, mathematics and chemistry, including some advanced aspects
B2	Use a range of routine skills, techniques and practices in chemical engineering

B3	Carry out routine investigations into practical and theoretical issues.
B4	Ability to use knowledge of chemical engineering to identify major hazards associated with a chemical process.
B5	
Communication, ICT and Numeracy Skills	
C1	Use a range of standard applications and instrumentation to obtain and process data
C2	Apply and evaluate numerical and graphical procedures to laboratory and literature data
C3	Present information in numerical, graphical and verbal forms to a variety of audiences
C4	
C5	
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Undertake critical analysis, evaluation and synthesis of information related to the main ideas and concepts within the discipline.
D2	Use a variety of approaches to develop solutions to defined problems.
D3	Display a critical evaluation of solutions and explanations of experimental data.
D4	
D5	
Autonomy, Accountability and Working With Others	
E1	Exercise autonomy and initiative in defined professional activities
E2	Take responsibility for work planning and time management within specified contexts
E3	Co-operate in group working exercises
E4	Work under guidance on current professional practice and issues
E5	

Level 8 Core Modules

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

8	ENGG08022	Chemical Engineering Fundamentals	20	✓			
8	ENGG08017	Design Analysis 1	20		✓		
8	ENGG08021	Introduction to Thermofluids	20		✓		
8	MATH08001	Mathematics For Design	20	✓			
8	CHEM08001	Physical Chemistry 2	20	✓			
8	ENGG08024	Process Modelling and Simulation	20		✓		

Footnotes for Core Modules:

Level 8 Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
9	ENGG00001	Sandwich Placement: Engineering	40	✓	✓	✓	
8	CHEM08001	Physical Chemistry 2	20	✓			

Footnotes for option modules

All students are expected to take CHEM08001 Physical Chemistry 2 unless they deemed to have equivalent prior learning.

All students undertaking the optional Industrial Placement year need to enrol on the module ENGG00001 (Sandwich Placement Engineering)

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22b	Level 8 Criteria for Progression and Award
	In line with the Regulatory Framework, To progress from SCQF 8 to SCQF 9 in this programme, students are normally required to obtain 240 credits from the above programme and achieve an overall average of all modules of =60% at Level 8. UWS regulations apply with regard to individual modules passes.

	All pre-requisite modules must be passed before progression is allowed. 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 SBE. Students obtaining 240 credits of which 90 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.

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	SCQF LEVEL 9 **Learning Outcomes (Maximum of 5 per heading)**
Knowledge and Understanding	
A1	Demonstrate a broad and integrated knowledge and understanding of major aspects of chemical engineering
A2	Display a critical understanding of principal theories, concepts and terminologies of chemical engineering science.
A3	Develop an integrated approach to chemical processing including safety, environmental issues, sustainability, economics and management.
A4	Awareness of the importance of safe working practices and of risk assessment
A5	
Practice - Applied Knowledge and Understanding	
B1	Use a selection of skills, techniques and practices in handling chemical engineering concepts and experimental information
B2	Display skills in selected equipment, techniques, practices and information at a specialised level in chemical engineering
B3	Demonstrate ability to critically analyse a chemical process to identify the risks involved.
B4	Practise routine and novel investigations and enquiries in chemical engineering
B5	
Communication, ICT and Numeracy Skills	
C1	Make formal and informal presentations on topics in chemical engineering by a variety of methods to a range of audiences

C2	Use a range of IT applications to obtain and manage information and to process and present experimental data
C3	Display the use of numerical and graphical procedures to interpret numerical information
C4	
C5	
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Undertake critical analysis, evaluation and synthesis of ideas, concepts, information and issues in the discipline.
D2	Identify and analyse routine professional problems and issues.
D3	Make use of a range of sources in making judgments and decisions.
D4	
D5	
Autonomy, Accountability and Working With Others	
E1	Exercise some autonomy and initiative in dealing with activities at a professional level
E2	Take some responsibility for the work of others and for the use of resources
E3	Practise working in group exercises taking account of others' roles and responsibilities.
E4	Work under guidance on aspects of professional skills and ethical codes.
E5	

Level 9 Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
9	ENGG09037	Chemical Process Principles	20	✓			
9	ENGG09036	Process Design, Control & Safety	20		✓		
9	ENGG09053	Biochemical and Environmental Engineering	20		✓		
9	ENGG09040	Thermodynamics & Heat Transfer	20	✓			

9	ENGG09049	Computer Aided Process Analysis and Design	20	✓	✓		
9	ENGG09038	Unit Operations 1	20		✓		

Footnotes for Core Modules:

Students need to pass all core modules in order to progress to the final year of the BEng Hons programme.

Level 9 Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
9	ENGG00001	Sandwich Placement: Engineering	40	✓	✓	✓	

Footnotes for option modules

All students undertaking the optional Industrial Placement year need to enrol on the module Sandwich Placement Engineering.

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22c	Level 9 Criteria for Progression and Award
	In line with the Regulatory Framework, to progress from SCQF 9 to SCQF 10 in this programme, students are normally required to obtain 360 credits from the above programme and achieve an average of all modules of =60% in at least 2 of the first 3 years of study inclusive of SCQF Level 9. All core modules must be passed and no student will be allowed to progress to Level 10 with credit deficit. Students completing the above described programme and obtaining 360 credits are eligible for the exit award of the BEng in Chemical Engineering. Any student who has completed 360 credits points, 300 being in Engineering, and not as laid out above, may be entitled to exit with BSc Chemical Engineering, at the discretion of the SBE. The award of distinction can be made to a student obtaining a pass degree as stated in the University Regulations.

	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.

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	SCQF LEVEL 10 **Learning Outcomes (Maximum of 5 per heading)**
Knowledge and Understanding	
A1	Knowledge and critical understanding of a broad range of engineering principles and theories of the main areas of chemical engineering
A2	Familiarity with the principles and applications of a range of modern design techniques and the ability to identify, define, and plan the steps necessary to design a chemical process and to carry out detailed design of process equipment
A3	Knowledge of modern specialist topics in selected areas of chemical engineering, and awareness of major issues at the frontiers of chemical process development
A4	Understanding of factors influencing the feasibility, design, commissioning and operation of chemical, process and biochemical plants including environmental and economic issues
A5	Awareness of the structure of industrial organisations and economic environment in which they operate. A6. Develop clear understanding of the importance of energy conservation and emissions reduction through knowledge of process integration and waste minimisation principles. A7. Show evidence of the application of energy preservation principles in relation to the design process.
Practice - Applied Knowledge and Understanding	
B1	Practical skills in unit operations laboratory practice
B2	The use of engineering software for the synthesis, design, analysis and evaluation of chemical processes
B3	Investigative skills and planning of strategies in problem solving
B4	Ability to use printed and other published materials as a learning resource
B5	Execution of a defined programme of research / investigation / design
Communication, ICT and Numeracy Skills	
C1	Communicate effectively within a team or group, to a non-expert audience and to individuals using a variety of means

C2	Information management skills, especially IT skills including on-line computer searches
C3	The ability to use, interpret results, and communicate outcomes of variety of discipline specific IT products such as process simulators, process safety analysis, cost estimation, process integration, and thermal systems analysis software.
C4	The ability to apply information technology to the design process.
C5	The ability to use IT to facilitate collaboration and information sharing within the organisation as well as communication with clients and other stakeholders.
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Development of rigour in investigation, evaluation and analysis
D2	Synthesise information from a number of sources to gain a coherent understanding of theory and practice
D3	The ability to use analytical and modelling technique to describe and evaluate the performance of systems and processes.
D4	
D5	
Autonomy, Accountability and Working With Others	
E1	Operate effectively in a group / team situation
E2	Take responsibility for personal and professional learning and development
E3	Management of time and prioritising of workloads
E4	
E5	

Level 10 Core Modules

SCQF Level	Module Code	Module Name	Credit	Term			Footnotes
				1	2	3	
10	ENGG10031	Chem Eng Design Study	40	✓	✓		
10	ENGG10033	Chemical Reactor Engineering	20	✓			
10	ENGG10044	Process Dynamics & Control	20		✓		

10	ENGG10084	Energy Systems Analysis and Design	20		✓		
10	ENGG10032	Unit Operations 2	20	✓			

Footnotes for Core Modules:

Level 10 Optional Modules

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

Footnotes for option modules

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22d	Level 10 Criteria for Progression and Award
	In line with the Regulatory Framework, for the award of BEng (Hons) Chemical Engineering, at least 480 credit points must be achieved with at least 240 in the subject area at SCQF level 9 and SCQF level 10 of which a minimum of at least 120 are at SCQF level 10. Any student who fails to satisfy this criterion could be awarded a BSc Hons degree in Chemical Engineering subject to University regulations. (At least 480 credits are required with 200 in the subject area at SCQF level 9 and SCQF level 10 with a minimum of 100 at SCQF level 10 including all the core modules for the BSC Hons award). If a student completes at least 36 weeks of work placed learning the student is eligible for the 'sandwich award' title. To progress from SCQF 10 to SCQF 11 in this programme, students are normally required to obtain 480 credits from the above programme and achieve an average of all modules of =60% at SCQF Level 10. Students obtaining 480 credits of which 240 are at SCQF 9 and SCQF 10 from the above programme including all core module but do not satisfy the requirements for progression to Level 11 are eligible for the BEng Hons Chemical Engineering Award.

	The Classification of Honours will be determined by University Regulation 3.20-3.24. Students must have obtained a pass in all modules listed as pre-requisites. Standard University guidelines will be followed to decide on honours degree classification. No Distinction is awarded at Honours level (Regulation 3.25). Links: UWS Regulatory Framework; and Student Experience Policy Statement.

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	SCQF LEVEL 11 **Learning Outcomes (Maximum of 5 per heading)**
Knowledge and Understanding	
A1	A Critical knowledge that covers and integrates most of relevant science and technology related to the design of process equipment and systems and their relevance and application in the chemical process industry context and at advance level.
A2	A critical understanding and embedment of the main theories, concepts and principles within Chemical Engineering towards the practice of the profession.
A3	Comprehension, appreciation and critical understanding of a range of specialised theories applied to the dynamic nature of Chemical Engineering knowledge towards understanding each individual design and complete process.
A4	Extensive, detailed and critical knowledge and understanding of the role of the chemical engineer in an integrated chemical process that takes account of other issues such as the environment, sustainability and resources conservation.
A5	Develop a critical understanding of the implication of knowledge of chemical engineering principles in the advancement of modern and innovative chemical processes design, conservation of resources and sustainability.
Practice - Applied Knowledge and Understanding	
B1	Use a significant range of the core chemical engineering knowledge and skills to advance the knowledge of chemical process design and its application in chemical process context.
B2	Develop the ability to use a range of specialised skills, techniques, practices and/or materials that are informed by the recent advances in the fields of chemical engineering.
B3	Apply a range of standard and specialised research and other techniques to advance the understanding of chemical process design.
B4	Plan, develop and execute a relevant design based on advanced knowledge, research and innovation within a wide and often changeable variety of economic, legal and environmental constraints in the field of chemical and process engineering.
B5	Apply advanced scientific knowledge in a wide variety of chemical process applications that demand innovation.
Communication, ICT and Numeracy Skills	

C1	Communicate, using appropriate methods, to a range of audiences with different levels of knowledge/expertise.
C2	Communicate with peers, more senior colleagues and specialists.
C3	Use a wide range of ICT applications to support and enhance work at this level and show critical understanding of the scope and limitations of the tools used and their underlying theoretical basis.
C4	Undertake critical evaluations of a wide range of numerical and graphical data with the ability to deal with situations involving missing data and lack of information using research.
C5	
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Apply critical analysis, evaluation and synthesis to forefront issues, or issues that are informed by forefront developments in the area of chemical engineering and the interaction with the other aspects of chemical process design such as environmental protection, safety, ethics and sustainability.
D2	Practice at a high level the ability to critically identify, analyse, conceptualise and define new and abstract problems related to chemical process design and the application of the concepts in a Chemical Engineering context.
D3	Develop and demonstrate original and creative thinking and responses in dealing with complex or novel problems and issues related to the design of chemical processes.
D4	Critically review, consolidate and extend knowledge, skills, practices and thinking in the field of chemical process design.
D5	Deal with complex issues and make informed judgements in situations where there is absence of complete or consistent data/information through innovation and research.
Autonomy, Accountability and Working With Others	
E1	Exercise high level of autonomy and initiative in professional and equivalent activities with the ability to work independently on significant and demanding tasks.
E2	Take responsibility for own work and/or significant responsibility for the work of others providing leadership.
E3	Demonstrate leadership and/or initiative and make an identifiable contribution to change and development.
E4	Practise in ways which draw on critical reflection on own and others' roles and responsibilities.
E5	Deal with complex ethical and professional issues in engineering context and make informed judgements on issues not addressed by current professional and/or ethical codes or practices.

Learning Outcomes - Level 11 Core Modules

SCQF Level	Module Code	Module Name		Credit	Term			Footnotes
					1	2	3	
11	ENGG11033	Advanced Fluid Mechanics and CFD	20	✓				11
11	ENGG11032	Advanced Heat Transfer	20	✓				11
11	ENGG11051	M Eng Chemical Engineering Research Project	20	✓	✓			11
11	ENGG11036	Advanced Reactor Design	20		✓			11
11	ENGG11037	Process Design, Sustainability and Safety	20	✓				11
11	ENGG11039	Separation Processes	20		✓			11

Footnotes for Core Modules:

Learning Outcomes - Level 11 Optional Modules

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

Footnotes for option modules

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22e	Level 11 Criteria for Award
	Those students who achieve 600 credits, including 360 at SCQF Levels 9, 10 and 11 from the above programme shall be eligible for the MEng (Hons) degree.

	The Classification will take into account student's performance at Level 9, Level 10 and Level 11. The composite mark is given by: 20% from Level 9 30% from Level 10 50% from Level 11 The classification will be determined as follows: First Class =70% Average Upper Second Class (2.1) =60% Average Lower Second Class (2.2) =50% Average If a student completes at least 36 weeks of work placed learning the student is eligible for the 'Sandwich Award' title. Links: UWS Regulatory Framework; and Student Experience Policy Statement.

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23	**Regulations of Assessment**

Candidates will be bound by the general assessment regulations of the University as specified in the University Regulatory Framework .

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.

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.

24	**Combined Studies**

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).

For students studying BA, BAcc, or BD awards the award will be BA Combined Studies.

For students studying BEng or BSc awards, the award will be BSc Combined Studies.

Change/Version Control

Changes made to the programme since it was last published:

What	When	Who
Updated Links: • Academic Engagement Procedure • Equality and Diversity	19/10/2023	C Winter

• University Regulatory Framework • Removed invalid links		
Guidance Note 2023-24 provided	12/12/23	D Taylor
General housekeeping to text across sections and addition of links and some specific guidance. Addition of Duration of Study and some other text – for CMA.	12/12/23	D Taylor

Version Number: UG 1 (2023-24)

- Change of programme leader.
- Chane to L7, L9 and L10 modules as done on BEng(Hons) chemical engineering.
- Change of name for ENGG11036 Multiphase and Biochemical Reactors Design module to Advanced Reactor Design.