# University of the West of Scotland

## Undergraduate Programme Specification

**Session: 23/24**
**Last Modified:** 12/02/23
**Status**: Draft / Published [click here to add detail]

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| 1 | **Named Award Title:** | **BEng (Hons) Chemical Engineering (Sandwich Available) Single** |
| 2 | **Award Title for Each Award: [1]** | **BEng (Hons) Chemical** Engineering **(Sandwich Available)**<br>**BSc Chemical Engineering (Sandwich Available)**<br>**Dip HE Engineering**<br>**Cert HE Engineering Science** |
| 3 | **Date of Validation / Approval:** | November 2007 |
| 4 | **Details of Cohorts Applies to:** | All those entering SCQF Level 8 from Sept 2015 |
| 5 | **Awarding Institution/Body:** | **University of the West of Scotland** |
| 6 | **Teaching Institution(s)[2]:** | **University of the West of Scotland**<br>[click here to add detail] |
| 7 | **Language of Instruction & Examination:** | **English** |
| 8 | **Award Accredited By:** | IChemE |
| 9a | **Maximum Period of Registration:** | [click here to add detail]<br>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<br>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:**

Year 1: BCCC, including Maths and Chemistry, plus SQA Standard Grade Chemistry and English.
Year 2: Entry may be possible with: SQA Advanced Highers: BBB (Chemistry, Maths and Physics).

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**or GCE**

Year 1: BCC including Maths and 1 science (Chemistry preferred), plus 3 GCSEs including Chemistry and English.
Year 2: GCE A-Levels: BBB (Chemistry, Maths and Physics).

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**or SQA National Qualifications/Edexcel Foundation**

Year 2 HNC Chemical Engineering or related subject (including Process Technologies).
Year 3 HND Chemical Engineering or related subject (including Process Technologies).

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**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)

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

[click here to add detail]

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| **16** | **General Overview**<br><br>The programme is designed to provide a sound fundamental knowledge of engineering and related enabling sciences, and the practical skills to operate successfully in areas such as the chemical industry, pharmaceutical industry, energy industry, environmental sector, food industry, electronic 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.<br><br>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.<br><br>The programme includes an optional industrial placement which allows the development of additional skills and can enhance employability.<br><br>Students with an Honours degree may proceed to postgraduate studies for MSc / PhD at this or other universities.<br><br>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 level and intensity of the programme is developed throughout the programme in line with SCQF criteria for each level, while the content is closely aligned with QAA subject benchmark statements at all stages. Student autonomy and individual responsibility for learning is encouraged at all levels and PDP is developed throughout the programme. |
| **17** | **Graduate Attributes, Employability & Personal Development Planning** |

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| | 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.<br><br>The timetabled PDP sessions will be associated with the following core modules for the Chemical Engineering programme:<br>Level 7 Trimester 1 Applied Engineering Science<br>Trimester 2 Technical Communications<br><br>Level 8 Trimester 1 Chemical Engineering Fundamentals<br>Trimester 2 Design Analysis 1<br>Trimester 2 Process Modelling and Simulation<br><br>Level 9 Trimester 1 Chemical Process Principles<br>Trimester 1 Computer Aided Process Analysis and Design<br>Trimester 2 Process Design, Control & Safety<br><br>Level 10 Trimester 1 & 2 Chem Eng Design Study<br><br>Trimester 2 Process Dynamics and Control. |
| **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.<br><br>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.<br><br>For the purposes of this programme, academic engagement equates to the following:<br><br>Attendance in lectures, tutorial sessions and all practical activities. |
| **20** | **Equality and Diversity** |

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| | The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code.<br><br>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.<br><br>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.<br><br>The programme is open to all students regardless of race, religion, gender or sexual orientation.<br><br>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)** |
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| | Outcomes should incorporate those applicable in the relevant QAA Benchmark statements.<br><br>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**<br>**Learning Outcomes (Maximum of 5 per heading)** |
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| **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. |

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| **A5** | Appreciate basic issues in health and safety at work.<br>A6. Show an awareness of the different engineering materials and their properties.<br>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 |

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| **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**<br>**Criteria for Progression and Award** |
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| | 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.<br><br>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.<br><br>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.<br><br>Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 & 3.26)<br><br>Links: UWS Regulatory Framework; and Student Experience Policy Statement. |

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| | **Level 8**<br>**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. |

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| **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 | ✓ | | | |

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| 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:**

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**Level 8 Optional Modules**

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

**Footnotes for option modules**

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| 22b | Level 8<br>Criteria for Progression and Award |
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| | In line with the Regulatory Framework, for the award of Diploma in Higher Education Engineering, at least 240 credit points must be achieved of which a minimum of 100 are at SCQF Level 8.<br><br>Those students who achieve at least 240 credits are required of which a minimum of 100 are at least SCQF level 8 shall be eligible for a Diploma in Higher Education Engineering.<br><br>Progression to SCQF 9 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. |

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| | Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 & 3.26)<br><br>Links: UWS Regulatory Framework; and Student Experience Policy Statement. |

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| | **SCQF LEVEL 9**<br>**Learning Outcomes (Maximum of 5 per heading)** |
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| **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 | |
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| **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:

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| 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

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

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| 22c | Level 9<br>Criteria for Progression and Award |
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| | In line with the Regulatory Framework, for the award of a BSc degree in Chemical Engineering, at least 360 credit points must be achieved with 200 in the subject area, of which a minimum of 100 are at SCQF level 9.<br><br>If a student completes at least 36 weeks of work placed learning the student is eligible for the 'sandwich award' title.<br><br>Subject to the criteria specified in the Regulatory Framework, this award may be made with Distinction.<br><br>A mean mark of 65% or above, or, a mean mark of at least 62% and a majority of the modules in the highest level of study at grade B1 or better, with no module graded at C.<br><br>Progression to SCQF 10 is subject to academic advice and module prerequisites.<br><br>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, at the discretion of the PAB.<br><br>Distinction will be awarded in line with University Regulations and no imported credit can be used. (Regulations 3.35 & 3.26)<br><br>Links: UWS Regulatory Framework; and Student Experience Policy Statement. |

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| | SCQF LEVEL 10<br>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.<br>A6. Develop clear understanding of the importance of energy conservation and emissions reduction through knowledge of process integration and waste minimisation principles.<br>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. |

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| **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:

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**Level 10 Optional Modules**

| SCQF Level | Module Code | Module Name | Credit | Term | | | Footnotes |
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Footnotes for option modules

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| 22d | Level 10<br>Criteria for Award<br>Criteria for Progression and Award OR |
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| | 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.<br><br>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.<br><br>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.<br>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.<br>The Classification of Honours will be determined by University Regulation 3.20-3.24.<br>Students must have obtained a pass in all modules listed as pre-requisites.<br><br>Standard University guidelines will be followed to decide on honours degree classification.<br><br>No Distinction is awarded at Honours level (Regulation 3.25).<br><br>Links: UWS Regulatory Framework; and Student Experience Policy Statement. |

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| | SCQF LEVEL 11 (For Integrated Masters Only)<br>Learning Outcomes (Maximum of 5 per heading) |
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| | **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. |

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| **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

X

| 22e | Level 11<br>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.<br><br>The Classification will take into account student's performance at Level 9, Level 10 and Level 11. The composite mark is given by:<br>20% from Level 9<br>30% from Level 10<br>50% from Level 11<br>The classification will be determined as follows: First Class =70% Average<br>Upper Second Class (2.1) =60% Average<br>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.<br><br>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:<br><br>• Academic Engagement Procedure<br>• Equality and Diversity<br>• University Regulatory Framework<br>• Removed invalid links | 19/10/2023 | C Winter |
| Guidance Note 2023-24 provided | 12/12/23 | D Taylor |
| General housekeeping to text across sections and addition of links and some specific guidance.<br><br>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.