ASTON UNIVERSITY PROGRAMME SPECIFICATION

Programme Title	Chemical Engineering
UCAS/JACS Code	H804
School/Subject Area	School of Engineering and Applied Science Chemical Engineering and Applied Chemistry
Final Award	MEng
Interim Awards	Certificate HE Diploma HE BEng (Hons)
Mode(s) of Study	Full time Sandwich
Normal Length of Programme	4 years [Full time] 5 years [Sandwich]
Total Credits	480 credits [Full time] 600 credits [Sandwich]
Programme Accredited By	Institution of Chemical Engineers
Dates Programme Specification Written and Revised	May 2005, July 2006, May 2007, May 2008, October 2008, August 2009, February 2010, August 2010, August 2011, August 2012, June 2013

Education Aims of the Programme	• To provide students with the opportunities to realise their academic potentials through relevant and planned learning experiences. • To provide a thorough grounding in the basic principles of chemical engineering. • To provide an opportunity to enhance their knowledge and skills in advanced chemical Engineering. • To provide an opportunity to extend their knowledge and skills in management studies. • To provide students with appropriately structured curricula, combining teaching in theoretical and knowledge-based principles with practical skills training. • To provide an up-to-date and professionally accredited education satisfying the institutional requirements of the Institution of Chemical Engineers. • To produce graduate engineers with the qualities and skills that are in demand by employers and who are able to make a valuable contribution to society in general. • To offer students the opportunity to obtain relevant industrial experience by providing the option of a sandwich year.
Relevent Subject Benchmark Statements and other External and Internal Reference Points used to inform programme outcomes	• Institution of Chemical Engineers for accreditation requirements • QAA subject benchmark for General Engineering • Engineering Professors Council interim report on output standards • UK Quality Code Part A.1 (2011)

Programme Structures and Requirements: Levels, Modules and Credits **Stage 1**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Introduction to Separation Processes	10	4	CE1001	Core	Y	N
Design and Build	10	4	CE1002	Core	Y	N
Process and Product Design	10	4	CE1004	Core	Y	N
Introduction to Transfer Processes	10	4	CE1005	Core	Y	N
Health, Safety and the Environment	10	4	CE1007	Core	Y	N
Professional Skills for Placements and Employment	10	4	CE1008	Core	Y	N
Physical Chemistry for Engineers	10	4	CE1103	Core	Y	N
Molecular Transformations for Engineers	10	4	CE1104	Core	Y	N
States of Matter	10	4	CH1105	Core	Y	N
Inorganic Chemistry I	10	4	CH1111	Core	Y	N
Choose 20 credits from the following options						
Basic Mathematics	10	4	AM10BM	Option	Y	N
Fundamental Mathematics	10	4	AM11FM	Option	Y	N
Transition Mathematics for Engineers	10	4	SE11EM	Option	Y	N
Mathematics for First Year Engineers	10	4	SE12EM	Option	Y	N
TOTAL	120					

Programme Structures and Requirements: Levels, Modules and Credits **Stage 2**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Process Design	20	5	CE2002	Core	Y	Y
Transfer Processes	10	5	CE2004	Core	Y	Y
Process Control and Instrumentation	10	5	CE2009	Core	Y	N
Separation Processes	10	5	CE2103	Core	Y	Y
Process Simulation	10	5	CE2105	Core	Y	Y
Reaction Kinetics	10	5	CE2106	Core	Y	Y
Chemical Engineering Laboratory	20	5	CE2110	Core	Y	Y
Engineering Materials 1	10	5	ME2019	Core	Y	N
Energy Supply	10	5	ME2042	Core	Y	N
Introduction to Business Management	10	4	SE1500	Core	Y	N
TOTAL	120					

Programme Structures and Requirements: Levels, Modules and Credits **Stage 3**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Process Economics and Loss Prevention	10	6	CE3001	Core	Y	Y
Sustainability Project	10	6	CE3012	Core	Y	N
Particle Processing	10	6	CE3013	Core	Y	N
Reaction Engineering	10	6	CE3102	Core	Y	Y
Process and Pollution Control	10	6	CE3104	Core	Y	N
Advanced Separation Processes	10	6	CE3105	Core	Y	Y
Advanced Transfer Processes	10	6	CE3106	Core	Y	Y
Advanced Process Design	30	7	CE4503	Core	N	Y
Energy Efficiency	10	6	ME3023	Core	Y	N
Choose 10 credits from the following options						
Chemical Analysis	10	5	CH2101	Option	Y	N
Advances in Biomaterals Science	10	6	CH3102	Option	Y	N
Innovation Management	10	5	ME2033	Option	Y	N
TOTAL	120					

Programme Structures and Requirements: Levels, Modules and Credits **Stage 3 P**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Choose 120 credits from the following options						
EAS Study Placement Year	120	P	SEP001	Option	N	N
EAS Industrial Placement Year	120	P	SEP002	Option	N	N
TOTAL	120					

Programme Structures and Requirements: Levels, Modules and Credits **Stage F**						
Module Title	**Credits**	**Level**	**Module Code**	**Core/Option**	**Condonable**	**Prerequisites**
Research Project	50	7	CE4005	Core	N	Y
Sustainable Energy Generation	10	7	CE4015	Core	Y	Y
Advanced Process Modelling and Control	10	7	CE4016	Core	Y	Y
Advanced Particle Processing	10	7	CE4018	Core	Y	N
Advanced Mass Transfer	20	7	CE4019	Core	Y	Y
Project Management	10	7	EM4003	Core	Y	N
Management of Change	10	7	EM4005	Core	Y	N
TOTAL	120					

Programme Outcomes, Learning and Teaching and Assessment Strategies			
Knowledge and Understanding			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	The basic mathematics, science and technology underpinning Chemical Engineering	Lectures, tutorial classes, practical laboratory work, independent and group project work, independent study For sandwich students, an agreed programme of professional experience and training	Examinations, written continuous assessment [in the form of laboratory and project reports, essays, solved problems, and dissertations], supervisor assessed project work, oral examinations and presentations. For sandwich students, written reports by the student, the academic and industrial supervisors reports will be considered.
2	The fundamental concepts and principles of Chemical Engineering		
3	The design and construction techniques applicable to Chemical Engineering		
4	Enhanced understanding of specific areas of advanced Chemical Engineering		
5	Extended understanding of business and management techniques.		
6	Sandwich students only - the relevance of the programme's discipline-specific and generic content to the world of work		

Intellectual Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Analyse the requirements of chemical engineering problems and select the appropriate technologies to solve the problems.	Lectures, tutorial classes,practical laboratory work, independent and group project work, independent study	Examinations, written continuous assessment [in the form of laboratory and project reports, essays, solved problems, and dissertations], supervisor assessed project work, oral examinations and presentations.
2	Evaluate and integrate information from a wide variety of sources.		
3	Plan, conduct, evaluate and report on a programme of work leading to an end product or process which utilises chemical engineering.		
4	Design a solution to a chemical engineering problem subject to various constraints, evaluate the design and make improvements.		
5	Handle an open-ended project which stretches and develops the students' problem-solving and creative thinking capacities.		
6	Apply a range of advanced techniques to more complex chemical engineering problems.		

Professional Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Plan and carry out a series of experiments	Lectures, tutorial classes, practical work [both assessed and unassessed] For sandwich students, an agreed programme of professional experience and training	Examinations, continuous assessment [in the form of laboratory and project reports, essays, solved problems, and dissertations], supervisor assessed project work, oral examinations and presentations. For sandwich students, written reports by the student the academic and industrial supervisors reports may also be considered.
2	Carry out a competent design of process equipment		
3	Prepare technical reports and presentations		
4	Use appropriate software packages		
5	Complete industrial training [Sandwich Students only]		

Transferable Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	The ability to communicate effectively in writing, orally and through technical diagrams.	Skills are developed through practical work, group and personal tutorial classes, practical work and projects andthe placement option.	Examinations, continuous assessment [in the form of laboratory and project reports, essays, solved problems, and dissertations], supervisor assessed project work, oral examinations and presentations. Many of these skills are assessed indirectly via other learning outcomes.
2	Team working		
3	Problem solving skills		
4	ICT skills		
5	Time management skills		
6	Independent learning skills		
7	Study skills		
8	Project and organisation management skills		

Entry Requirements	1. The general entry requirements of the School/programme are GCSEs English and Mathematics at Grade C; 340/360 points [AAB/AAA] at A Level 2. In addition to satisfying the general entry requirements, candidates must satisfy any specific entry requirements for the programme, as approved by the School Learning and Teaching Committee. This includes Chemistry and Mathematics at A Level or equivalent. Two AS level passes may be substituted for one other A Level subject. Other subjects and other qualifications of equivalent standing, as approved by School Learning and Teaching Committee, may be acceptable alternatives. 3. Students already reading another degree programme at Aston University may be allowed to transfer to this programme, with the agreement of the Schools Associate Dean of Undergraduate Programmes. 4. Students who have satisfied the Board of Examiners in the Stage Two Assessments for the BEng Chemical Engineering Programme and normally have achieved an overall mark of not less than 60% may be permitted by the Schools Executive Dean to transfer to the Third Year of the MEng Chemical Engineering Programme

Programme Regulations	**Attendance requirements** Students are normally required to attend the University for four stages or five stages, with an approved placement, over a period of four or five consecutive academic years, with the placement as the third or fourth stage. Each stage at Aston University consists of three terms. In order to qualify for the award of the degree a student must have attended the required proportion of tutorials, seminars, practical classes and lectures specified by the Schools Executive Dean. The Programme Handbook provides details of procedures for monitoring attendance and dealing with poor attendance. In the case of repeated unexcused absence over a period of two weeks or more, disciplinary proceedings may be instituted in the form of an official warning letter requiring attendance. If there is no response to this letter or satisfactory attendance is not resumed, the Executive Dean may require the student to withdraw from the programme. Students are required to complete and pass 120 credits in each year of study. In the first year students will be streamed onto certain Maths modules, according to knowledge and aptitude. **Industrial/Professional Training** Each student is required to submit satisfactory reports of the work carried out during the placement stage and a poster presentation. This work will be assessed as one module, worth 120 credits at level P. The placement is graded and does contribute to the classification of the degree awarded. Satisfactory completion of the assessment requirements is given in the CEAC Industrial Placement Handbook. **Exemptions from [Professional Qualification] examinations** In order to obtain exemption from the Institution of Chemical Engineers the following conditions must be satisfied. An overall satisfactory standard must be achieved in Part II of module CE4503 and at least a third class honours degree. **Assessment** Unsatisfactory Performance Students must normally achieve an overall mark of not less than 60% in Stage 1 and 2 Assessments. Otherwise the Board may allow transfer to Stage 2 or 3 of the BEng Chemical Engineering Programme or other Programmes agreed by the Schools Associate Dean of Undergraduate Programmes. **Award of Degree** In calculating the overall mark in the Final Stage of the full time programme, 10% of the total mark will be based on the overall performance in the Second Stage of the programme, 40% of the total mark will be based on the overall performance in the Third Stage of the programme and 50% of the total mark will be based on the overall performance in the Final (Fourth) Stage of the programme. In the case of the sandwich programme, 10% of the total mark will be based on the overall performance in the Placement (either Third or Fourth) Stage of the programme, 40% of the total mark will be based on the overall performance in the Third or Fourth (dependent on the Stage in which the placement is taken) and 50% of the total mark will be based on the overall mark in the Final (Fifth) Stage of the programme.

General Regulations (http://www1.aston.ac.uk/registry/for-staff/regsandpolicies/general-regulations/) and the Regulations for the programme (above) take precedence over other information sources such as student handbooks if there is a conflict. If there is a conflict between General Regulations and Programme Regulations then General Regulations take precedence unless an exemption has been approved.

This specification provides a concise summary of the main features of the programme and the threshold learning outcomes that a student might normally be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. **The individual modules included in the programme may differ from those included in this programme specification as our programmes are subject to continuous review**. Information on admissions requirements and career opportunities is available in the relevant prospectus. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the appropriate module guides and programme handbook(s) which are available to students on enrolment.