

MSc Advanced Chemical Engineering

This document provides a definitive record of the main features of the programme and the learning outcomes that a typical student may reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities provided. This programme specification is intended as a reference point for prospective students, current students, external examiners and academic and support staff involved in delivering the programme and enabling student development and achievement.

Programme Information

Programme Title	Advanced Chemical Engineering		
Award(s)	MSc		
Programme Code	H8U2		
Associateship	N/A		
Awarding Institution	Imperial College London		
Teaching Institution	Imperial College London		
Faculty	Faculty of Engineering		
Department	Department of Chemical Engineering		
Mode and Period of Study	1 academic year, full-time		
Cohort Entry Points	Annually in October		
Relevant QAA Benchmark Statement(s) and/or other external reference points	Engineering		
Total Credits	ECTS:	90	CATS: 180
FHEQ Level	Level 7		
EHEA Level	2 nd cycle		
External Accrator(s)	N/A		
Specification Details			
Student cohorts covered by specification	2016/17 entry		
Person responsible for the specification	Dr Jason Hallett (MSc Advanced Chemical Engineering Course Co-ordinator) and Amelia Jedynak (MSc Administrator for Advanced Chemical Engineering Programmes)		
Date of introduction of programme			

Date of programme specification/revision	October 2016
Description of Programme Contents	
<p>This programme offers students a broad range of advanced technical courses and management courses. Students take 8 modules (including a core Advanced Process Design course, and with the opportunity to take one business module), follow the professional skills workshops and join one of the Department's research themes for a year-long research project. This programme is ideal for students wishing to develop a diversified knowledge base.</p>	
Learning Outcomes	
<p>The Imperial Graduate Attributes are a set of core competencies which we expect students to achieve through completion of any Imperial College degree programme. The Graduate Attributes are available at: www.imperial.ac.uk/students/academic-support/graduate-attributes</p>	
<p>Knowledge and Understanding of:</p> <ol style="list-style-type: none"> 1. A selection of the major topics in the subject, their recognition and underlying fundamental principles 2. Research techniques which might include information retrieval, experimental design and statistics, modelling and safety; 3. The essential facts, concepts, principles and theories relevant to the student's area of research; 4. Management and communication skills, including problem definition, project design, decision processes, teamwork, written and oral reports, scientific publications. <p>Intellectual Skills:</p> <p>Upon completion of the programme, students should be able to:</p> <ol style="list-style-type: none"> 1. Analyse and solve problems using a multidisciplinary approach, applying professional judgements to balance costs, benefits, safety and social and environmental impact; 2. Integrate and critically evaluate information; 3. Formulate and apply appropriate solutions; 4. Plan, conduct and write-up a programme of original research. <p>Practical Skills:</p> <p>Upon completion of the programme, students should be able to:</p> <ol style="list-style-type: none"> 1. Plan and execute safely a series of experiments or computations; 2. Use laboratory methods or computer-based tools to generate data ; 3. Analyse results, determine their strength and validity, and make recommendations; 4. Prepare technical reports; 5. Give technical presentations; 6. Use scientific literature effectively. <p>Transferable Skills:</p> <p>Upon completion of the programme, students should be able to:</p> <ol style="list-style-type: none"> 1. Communicate effectively through oral presentations, computer processing and presentations, and written reports; 2. Apply knowledge and modelling skills; 3. Apply acquired management skills: decision processes, objective criteria, problem definition, project design and evaluation needs; 	

4. Integrate and evaluate information from a variety of sources;
5. Transfer techniques and solutions from one discipline to another;
6. Use Information and Communications Technology;
7. Manage resources and time;
8. Learn independently with open-mindedness and critical enquiry;
9. Learn effectively for the purpose of continuing professional development.

Entry Requirements

Academic Requirement	High 2.1/ 1.1 (First) Honours degree in an Engineering, Physical Science, Mathematical, or Life/Biomedical Sciences based subject.
Non-academic Requirements	None
English Language Requirement	IELTS 6.5 with a minimum of 6.0 in each element or equivalent.

The programme's competency standards document can be found at: [TBC](#)

Learning & Teaching Strategy

Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> • Lectures • Seminars • Laboratory work • Computer-based work • Skills workshops
E-learning & Blended Learning Methods	<ul style="list-style-type: none"> • N/A
Project and Placement Learning Methods	<ul style="list-style-type: none"> • Independent Research Project • Project reports

Assessment Strategy

Assessment Methods	<ul style="list-style-type: none"> • Coursework • Examinations • Practical
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Academic Feedback Policy

Coursework assignments during the year are normally marked within two weeks of submission. Early feedback to students on research performance is given following assessment of the Literature Review (submitted mid-February) and Research Presentations (mid-September).

A preliminary Examiners' Meeting is held in July to confer research marks to date, as well as provisional examination marks (which are not formally ratified until the Final Exam Board in November). Some informal feedback on progress can then be given to students, including an indication of overall exam performance and research marks to date.

The exit questionnaire that all students are asked to complete upon submission of their thesis is used to monitor the effectiveness of our feedback procedures.

Re-sit Policy

The College's Policy on Re-sits is available at: www.imperial.ac.uk/registry/exams/resit

Mitigating Circumstances Policy

The College's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/registry/exams

Assessment Structure

Marking Scheme

Pass

- A candidate must have achieved at least 50% in both the taught and research components of the course. If you fail one of the components, you fail the MSc.

Merit

- A candidate must have achieved at least 60% in both the taught and research components of the course.

Distinction

- A candidate must have achieved at least 70% in both the taught and research components of the course.

Where appropriate, a Board of Examiners may award a result of pass where a candidate has achieved an aggregate mark of 50% or greater in the Exam component, but marginally failed one individual examination.

Module Weightings

Module	% Module Weighting
Advanced Process Design	6.66r%
7 x elective modules	6.66r% each
Research Project	46.66r%

Indicative Module List

Code	Title	Core/ Elective	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
CE4-36	Advanced Process Design	CORE	30	120	0	150	70%	30%	0%	7	6
RES	Research Project	CORE	210	840	0	1050	0%	90%	10%	7	42
CE4-28	Carbon Capture & Clean Fossil Fuels	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE3-06	Environmental Engineering	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE3-02	Reaction Engineering 2	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-08	Dynamic Behaviour in Process Systems	ELECTIVE	24	126	0	150	80%	20%	0%	7	6
CE4-30	Nuclear Chemical Engineering	ELECTIVE	24	126	0	150	100%	0%	0%	7	6
CE3-03-2	Fluid Mechanics	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
ME3-HNUCN	Introduction to Nuclear Energy	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-31	Transport Processes in Biological Systems	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-15	Membrane Science & Membrane Separation Processes	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE3-03-3	Particle Engineering	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-16	Process Heat Transfer	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-33	Molecular Modelling of Fluids	ELECTIVE	30	120	0	150	100%	0%	0%	7	6

Indicative Module List

Code	Title	Core/ Elective	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
CE4-32	Biochemical Engineering	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-27	Advanced Bioprocess Engineering	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-21	Modelling of Biological Systems	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-06A	Advanced Process Optimisation I	ELECTIVE	30	120	0	150	75%	25%	0%	7	6
CE4-05	Advanced Process Operations	ELECTIVE	30	120	0	150	70%	30%	0%	7	6
CE4-15	Colloid & Interface Science	ELECTIVE	30	120	0	150	75%	25%	0%	7	6
CE4-20	Pharmaceutical Process Development	ELECTIVE	30	120	0	150	100%	0%	0%	7	6
CE4-23	Product Characterisation	ELECTIVE	30	120	0	150	75%	25%	0%	7	6
BS0806	Entrepreneurship	ELECTIVE	30	120	0	150	0%	80%	20%	7	6
BS0845	Strategic Management	ELECTIVE	30	120	0	150	80%	20%	0%	7	6
BS0808	Finance and Financial Management	ELECTIVE	30	120	0	150	70%	30%	0%	7	6
BS0820	Managing Innovation	ELECTIVE	30	120	0	150	80%	20%	0%	7	6
BS0821	Project Management	ELECTIVE	30	120	0	150	0%	100%	0%	7	6

Supporting Information

The Programme Handbook is available at:

<http://www.imperial.ac.uk/engineering/departments/chemical-engineering/courses/postgraduate/msc/>

The Module Handbook is available at:

<http://www.imperial.ac.uk/engineering/departments/chemical-engineering/courses/postgraduate/msc/>

The College's entry requirements for postgraduate programmes can be found at:

www.imperial.ac.uk/study/pg/apply/requirements

The College's Quality & Enhancement Framework is available at:

www.imperial.ac.uk/registry/proceduresandregulations/qualityassurance

The College's Academic and Examination Regulations can be found at:

<http://www3.imperial.ac.uk/registry/proceduresandregulations/regulations>

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<http://www.imperial.ac.uk/admin-services/secretariat/college-governance/charters-statutes-ordinances-and-regulations/>

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<http://www.hefce.ac.uk/reg/of/>