

Programme Information		
Programme Title	Programme Code	HECoS Code
Advanced Chemical Engineering	H8U2	For Registry Use Only

Award	Length of Study	Mode of Study	Entry Point(s)	Total Credits	
				ECTS	CATS
MSc	1 Calendar Year (12 months)	Full-Time	Annually in October	90	180

The PG Certificate/PG Diploma are intermediate awards and are not available for entry. All students must apply to and join the MSc.

Ownership			
Awarding Institution	Imperial College London	Faculty	Faculty of Engineering
Teaching Institution	Imperial College London	Department	Chemical Engineering
Associateship	N/A	Main Location(s) of Study	South Kensington Campus

External Reference	
Relevant QAA Benchmark Statement(s) and/or other external reference points	Master's Degrees in Engineering
FHEQ Level	Level 7 - Master's
EHEA Level	2nd Cycle

External Accreditor(s) (if applicable)			
External Accreditor 1:	IChemE		
Accreditation received:	2019	Accreditation renewal:	2023

Collaborative Provision			
Collaborative partner	Collaboration type	Agreement effective date	Agreement expiry date
N/A	N/A	N/A	N/A

Specification Details	
Programme Lead	Dr Rongjun Chen - MSc Advanced Chemical Engineering Course Coordinator
Student cohorts covered by specification	2020-21 entry
Date of introduction of programme	N/A

Programme Overview

This programme offers a broad range of advanced technical courses and management courses. Students will take 8 modules in total which include a core Advanced Process Design course, a core Advanced Environmental Engineering course, and the opportunity to take one business module.

Additionally, students will follow the professional skills workshops and join one of the Department's research themes for a year-long research project. This programme is ideal if you are wishing to develop a diversified knowledge base.

Learning Outcomes**Knowledge and Understanding of:**

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.

Intellectual Skills:

Upon completion of the programme, students should be able to:

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.

Practical Skills:

Upon completion of the programme, students should be able to:

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.

Transferable Skills:

Upon completion of the programme, students should be able to:

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.

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

Entry Requirements	
Academic Requirement	Normally a 2.1 UK Bachelor's Degree with Honours in an Engineering, Physical Science, Mathematical, or Life/Biomedical Sciences based subject (or a comparable qualification recognised by the College).
Non-academic Requirements	N/A
English Language Requirement	Standard requirement IELTS score of 6.5 overall (minimum 6.0 in all elements)
Admissions Test/Interview	N/A
Learning & Teaching Approach	
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"> • Blackboard • Online lectures via Panopto • MS Teams
Project Learning Methods	<ul style="list-style-type: none"> • Independent Research Project • Project reports
Overall Workload	
<p>Your overall workload consists of face-to-face sessions and independent learning. Your actual contact hours may vary according to the optional modules you choose to study, the module list found under 'Programme Structure' gives an indication of how much time you will need to allocate to different activities at each level of the programme. At Imperial, each ECTS credit taken equates to an expected total study time of 25 hours. Therefore, the expected total study time is 2,250 hours per year.</p>	
Assessment Strategy	
Assessment Methods	
<ul style="list-style-type: none"> • Coursework • Examinations • Practical 	
Academic Feedback Policy	
<p>A preliminary Examiners' Meeting is held in July to confer provisional examination marks and research marks to date (which are not formally ratified until the final meeting of the Board of Examiners in October). Some informal feedback on progress can be given to students, including an indication of overall exam performance after the preliminary Examiners' Meeting in July. Feedback on the compulsory Advanced Process Design module will be offered in Spring term.</p> <p>The College's Policy on Academic Feedback and guidance on issuing provisional marks to students is available at: www.imperial.ac.uk/about/governance/academic-governance/academic-policy/exams-and-assessment/</p>	
Re-sit Policy	
<p>In line with College policy, students who are unsuccessful in any of their examinations may usually be allowed an opportunity to re-sit at the discretion of the Board of Examiners.</p> <p>The College's Policy on Re-sits is available at: www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/</p>	

Mitigating Circumstances Policy

Students may be eligible to apply for mitigation if they have suffered from serious and unforeseen circumstances during the course of their studies that have adversely affected their ability to complete an assessment task and/or their performance in a piece of assessment.

The College's Policy on Mitigating Circumstances is available at: www.imperial.ac.uk/student-records-and-data/for-current-students/undergraduate-and-taught-postgraduate/exams-assessments-and-regulations/

Additional Programme Costs

This section should outline any additional costs relevant to this programme which are not included in students' tuition fees.

Description	Mandatory/Optional	Approximate cost
Computer	Mandatory	Provided after application.

Programme Structure

All students take 8 modules, including the core module Advanced Process Design, alongside their Research Project. Students must take the compulsory modules for their MSc stream. The remaining optional modules can be selected from the list on the next page. No more than one business module may be selected.

During the MSc course students will join one of the department's research areas and an individual research project is carried out continuously from December. Students should dedicate as much time as possible to their research project and meet regularly with their supervisor to discuss progress. From June onwards, all their time is devoted to the MSc research project.

The research is normally conducted at Imperial, but it is possible to opt for a research project at the University of Tokyo.

There are four elements to the Research Project;

- Literature Review (ca. 10 pages + references) – 10%
- Research project performance – 20%
- Final written paper (max. 50,000 words) – 60%
- Poster Presentations – 10%

The weightings of individual modules and the Research Project can be seen below.

Module Weightings

Module	% Module Weighting
Advanced Process Design	6.66%
Advanced Environmental Engineering	6.66%
6 x elective modules	6.66% each
Research Project	46.66%

Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
CENG97059	Research Project	Core	1	-	-	1050	0%	70%	30%	7	42
CENG97040	Advanced Process Design	Core	1	30	120	150	0%	100%	0%	7	6
CENG97066	Advanced Environmental Engineering	Core	1	20	130	150	0%	100%	0%	7	6
CENG97030	Carbon Capture & Clean Fossil Fuels	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97068	Dynamical Systems in Chemical Engineering	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97012	Dynamic Behaviour in Process Systems	Elective	1	30	120	150	80%	20%	0%	7	6
CENG97032	Nuclear Chemical Engineering	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97002	Fluid Mechanics	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97034	Transport Processes in Biological Systems	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97015	Membrane Science & Membrane Separation Processes	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97003	Particle Engineering	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97017	Process Heat Transfer	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97038	Molecular Modelling of Fluids	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97036	Biochemical Engineering	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97028	Advanced Bioprocess Engineering	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97023	Modelling of Biological Systems	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97010	Advanced Process Optimisation I	Elective	1	30	120	150	75%	25%	0%	7	6
CENG97008	Advanced Process Operations	Elective	1	30	120	150	70%	30%	0%	7	6
CENG97019	Colloid & Interface Science	Elective	1	30	120	150	75%	25%	0%	7	6
CENG97021	Pharmaceutical Process Development	Elective	1	30	120	150	100%	0%	0%	7	6
CENG97026	Product Characterisation	Elective	1	30	120	150	75%	25%	0%	7	6
CENG97069	Practical Process engineering in the Oil and Gas Industry	Elective	1	30	120	150	100%	0%	0%	7	6
BUSI96010	Entrepreneurship Online	Elective	1	30	120	150	0%	80%	20%	6	6
BUSI96001	Entrepreneurship Business Plan Competition	Elective	1	30	120	150	0%	80%	20%	6	6
BUSI96006	Business Strategy	Elective	1	30	120	150	80%	20%	0%	6	6
BUSI96002	Finance and Financial Management	Elective	1	30	120	150	70%	30%	0%	6	6
BUSI96004	Managing Innovation	Elective	1	30	120	150	80%	20%	0%	6	6
BUSI96005	Project Management	Elective	1	30	120	150	0%	100%	0%	6	6
BUSI96008	Managerial Economics Online	Elective	1	30	120	150	70%	30%	0%	6	6
BUSI96009	Corporate Finance Online	Elective	1	30	120	150	70%	30%	0%	6	6
BUSI96011	Accounting Online	Elective	1	30	120	150	70%	30%	0%	6	6
BUSI96003	Business Economics	Elective	1	30	120	150	60%	30%	10%	6	6

Classification and Programme Specific Regulations

Pass:

- Achieve a minimum aggregate mark of 50% across the core and elective taught modules;
- Achieve a minimum aggregate mark of 50% in the Research Project module;
- Achieve a minimum aggregate mark of 50% for the programme as a whole.

A student who fails to meet this requirement may be Compensated. Compensation is awarded at the discretion of the Board of Examiners and only in accordance with paragraph 14.1 of the Regulations for the Examination of Master's Level Degrees.

Merit:

- Achieve a minimum aggregate mark of 60% across the core and elective taught modules;
- Achieve a minimum aggregate mark of 60% in the Research Project module;
- Achieve a minimum aggregate mark of 60% for the programme as a whole.

A student who fails to meet this requirement may be Compensated. Compensation is awarded at the discretion of the Board of Examiners and only in accordance with paragraphs 14.1 and 14.2.1 of the Regulations for the Examination of Master's Level Degrees.

Students who have failed any examination and passed on re-entry cannot be considered for the award of a Merit classification.

Distinction:

- Achieve a minimum aggregate mark of 70% across the core and elective taught modules;
- Achieve a minimum aggregate mark of 70% in the Research Project module;
- Achieve a minimum aggregate mark of 70% for the programme as a whole.

A student who fails to meet this requirement may be Compensated. Compensation is awarded at the discretion of the Board of Examiners and only in accordance with paragraphs 14.1 and 14.2.1 of the Regulations for the Examination of Master's Level Degrees.

Students who have failed any examination and passed on re-entry cannot be considered for the award of a Merit/Distinction classification.

Supporting Information

The Programme Handbook will be available from the course administrator and will be sent to all students before the start of term.

The Module Handbook will be available from the course administrator and will be sent to all students before the start of term.

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:
www.imperial.ac.uk/about/governance/academic-governance/regulations

Imperial College is an independent corporation whose legal status derives from a Royal Charter granted under Letters Patent in 1907. In 2007 a Supplemental Charter and Statutes was granted by HM Queen Elizabeth II. This Supplemental Charter, which came into force on the date of the College's Centenary, 8th July 2007, established the College as a University with the name and style of "The Imperial College of Science, Technology and Medicine".
www.imperial.ac.uk/admin-services/secretariat/college-governance/charters/

Imperial College London is regulated by the Office for Students (OfS)
www.officeforstudents.org.uk/advice-and-guidance/the-register/

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 primarily intended as a reference point for prospective and current students, academic and support staff involved in delivering the programme and enabling student development and achievement, for its assessment by internal and external examiners, and in subsequent monitoring and review.

Modifications

Description	Approved	Date	Paper Reference
N/A	N/A	N/A	N/A