

MSci Chemistry with Research Abroad and a Year in Industry

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

Award(s)	MSci			
Programme Title	Chemistry with Research Abroad and a Year in Industry			
Programme Code	F101			
Awarding Institution	Imperial College London			
Teaching Institution	Imperial College London			
Faculty	Faculty of Natural Sciences			
Department	Department of Chemistry			
Associateship	Royal College of Science			
Mode and Period of Study	5 academic years, full-time			
Cohort Entry Points	Annually in October			
Relevant QAA Benchmark Statement(s) and/or other external reference points	Master's Degree in Chemistry			
Total Credits	ECTS:	304/308	CATS:	608/616
FHEQ Level	Level 7			
EHEA Level	2 nd cycle			
External Accreditor(s)	Royal Society of Chemistry			
Specification Details				
Student cohorts covered by specification	2016/17 entry			
Person responsible for the specification	Dr Bridgette Duncombe, Director of Undergraduate Studies			
Date of introduction of programme	-			
Date of programme specification/revision	March 2017			

Description of Programme Contents

These courses help many graduates look towards careers overseas.

They combine a four-year Chemistry degree of full MSci status with the opportunity to carry out your final year research project and some of your final year optional chemistry modules in a partner university abroad.

If studying at a European partner university operating in another language, you also have the opportunity to develop fluency in that language.

Years one and two of all programmes follow the same core course content supplemented by two ancillary modules that are designed for specific degree programmes. This structure allows many of our students the opportunity to transfer to a different degree programme at a later stage providing they have studied the appropriate ancillary subjects in year one.

Practical experience in the lab is a major part of all of Imperial's chemistry courses.

These courses allow students to gain experience of using chemistry in an industrial context. They are one year longer than their counterparts without the year in industry, but their content is otherwise the same.

Learning Outcomes

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

Upon successful completion of the programme students should be able to demonstrate:

Intellectual Skills:

- The ability to demonstrate knowledge and understanding of essential facts, concepts, principles and theories relating to the subject areas identified
- The ability to apply such knowledge and understanding to the solution of qualitative and quantitative problems mostly of a familiar nature
- The ability to recognise and analyse problems and plan strategies for their solution • skills in the evaluation, interpretation and synthesis of chemical information and data
- Skills in the practical application of theory using computer software and models
- Skills in communicating scientific material and arguments
- Information technology (IT) and data-processing skills, relating to chemical information and data.

Practical Skills:

- Skills in the safe-handling of chemical materials, taking into account their physical and chemical properties including any specific hazards associated with their use and the ability to conduct risk assessments
- Skills required for the conduct of documented laboratory procedures involved in synthetic and analytical work, in relation to both inorganic and organic systems
- Skills in the monitoring, by observation and measurement, of chemical properties, events or changes, and the systematic and reliable recording and documentation thereof

- Skills in the operation of standard chemical instrumentation
- The ability to interpret and explain the limits of accuracy of their own experimental data in terms of significance and underlying theory.

Transferable Skills:

- Communication skills, covering both written and oral communication
- Problem-solving skills, relating to qualitative and quantitative information
- Numeracy and mathematical skills, including such aspects as error analysis order-of-magnitude estimations, correct use of units and modes of data presentation
- Information retrieval skills, in relation to primary and secondary information sources, including information retrieval through online computer searches
- IT skills
- Interpersonal skills, relating to the ability to interact with other people and to engage in team working
- time management and organisational skills, as evidenced by the ability to plan and implement efficient and effective modes of working
- Skills needed to undertake appropriate further training of a professional nature.

Entry Requirements

Academic Requirement	Grade Requirement	Minimum AAA overall
	Subject Requirements	A in Chemistry A in Mathematics A in another subject. Preferred subjects are Biology, Economics or Physics.
	Excluded Subjects	General Studies
International Baccalaureate (IB)	Grade Requirement	Minimum 38 overall
	Subject Requirements	7 in Chemistry higher level 6 in Mathematics higher level 6 in another specified subject higher level (preferred subjects are Biology, Economics or Physics)
GCSE Requirements		Pass marks in Mathematics (typically grade B or above)
English Language Requirement		Standard requirement
Admissions Tests		Candidates may be asked to undertake an admissions test set by the College in order to provide additional information for the Admissions Tutor in support of an application.
Interview		Selected applicants only

The programme's competency standards documents can be found at:

<http://www.imperial.ac.uk/chemistry/undergraduate/course-structure-and-content/>

Learning & Teaching Strategy	
Scheduled Learning & Teaching Methods	<ul style="list-style-type: none"> • Lectures • Seminars • Tutorials • Practical workshops • Guided laboratory work • Problem classes • Field trips • Professional skills events
E-learning & Blended Learning Methods	<p>Virtual Learning Environment (VLE) is used extensively and includes:</p> <ul style="list-style-type: none"> • Lecture material and lecture recordings • Pre-laboratory work including competency quizzes • On-line quizzes and material to support lecture material • Plagiarism and safety awareness materials imbedded in online lecture and lab modules
Project and Placement Learning Methods	<ul style="list-style-type: none"> • Group project work • Research project
Assessment Strategy	
Assessment Methods	<ul style="list-style-type: none"> • Written examinations • Oral presentations • Written reports • Coursework • Academic posters • Literature report
Academic Feedback Policy	
<p>Students can expect to receive the academic feedback in the following ways:</p> <ul style="list-style-type: none"> • Academic subject tutorials in small groups throughout years 1 and 2 • Scheduled meetings with personal tutors twice a term during Years 1 and 2 • Scheduled meetings with personal tutors once a term during Year 3 • Accompanying class tutorial sessions in year 3 • Academic feedback during the year in Industry (year 4) will be provided on an ad hoc basis by the academic supervisor for the placement as well as by the industrial supervisor • Academic feedback during the year abroad (year 5) will vary depending on the academic institution attended • Feedback on lab scripts will be provided to students within two weeks of submission. • Provisional exam results are posted to Blackboard as soon as possible • A brief commentary on the cohort's performance on each exam paper including a histogram of the cohort's performance is posted on Blackboard 	

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

The pass mark for each assessment is 40%. The pass mark for each module is 40%. Exceptionally, the pass mark for the 'Maths' module is 60%.

Year One

A student must:

- Achieve an aggregate mark of at least 40% in each module
- Achieve a 'pass' in the 'Maths' module

Year Two

A student must:

- Achieve an aggregate mark of at least 40% in each module and must normally gain at least 65% overall average in the second year to proceed to year three

Year Three

A student must:

- Achieve an aggregate mark of at least 40% in the core modules 'Advanced Chemistry' and 'Chemistry Coursework 3' or 'Chemistry Coursework 3 for Linguists'
- Achieve an aggregate mark of at least 40% in the module 'Advanced Chemistry Research Topics'
- Achieve an aggregate mark of at least 40% in the relevant language module (for students spending their fifth year in a non-English-speaking partner institution only)

Year Four

A student must:

- Achieve an aggregate mark of at least 50% in the Year in Industry report

Year Five

A student must:

- Achieve an aggregate mark of at least 40% in the module 'Year Abroad'

The Department of Chemistry has partnerships with the following institutions:

France
École Polytechnique
École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris
École Normale Supérieure

Germany
Ludwig-Maximilians-Universität München
Gottfried Wilhelm Leibniz Universität Hannover
Friedrich-Alexander-Universität Erlangen-Nürnberg
Philipps-Universität Marburg

Spain
Universitat de Barcelona
Universitat de València (Estudi General)

Switzerland
Ecole Polytechnique Fédérale de Lausanne
Eidgenössische Technische Hochschule Zürich

The Netherlands
Universiteit Leiden

Singapore
Nanyang Technological University, Singapore

USA
Emory University
Georgia Institute of Technology

Each partner institution uses a different marking scheme with different views regarding which mark or grade should correspond to the same level of performance. There must therefore be a rational basis for comparing performance at each partner institution with the Imperial College London standards.

Experience of working with these institutions over many years has led to the development of the following comparison table, which gives an indication of how these different marking systems map onto the Imperial College London marking scheme. This table is used by the Board of Examiners to determine classification decisions; the Board will take into account the small uncertainty inherent in any such mark conversion procedure and exercises its discretion in favour of the student when making its final decision.

France	Imperial
20	100
18	88
16	75
14	65
12	55
10	45
8	36
6	27
4	18
2	9

Spain	Imperial
10	100
9	88
8	75
7	65
6	55
5	45
4	36
3	27
2	18
1	9

Netherlands	Imperial
10.0	100
9.0	90
8.5	80
8.0	75
7.5	70
7.0	65
6.5	60
6.0	55
25.0	38

Switzerland	Imperial
6.0	90
5.5	82
5.0	74
4.5	65
4.0	56
3.5	48
3.0	40
2.5	30
2.0	20

USA	Imperial
4 (A)	80
3.7 (A-)	75
3.3 (B+)	70
3.0 (B)	65
2.7 (B-)	60
2.3 (C+)	50
2.0 (C)	40
1.7 (C-)	
1.3 (D+)	
1.0 (D)	
0.0 (F)	

Singapore	Imperial
5 (A+)	85
5 (A)	77
4.5 (A-)	72
4 (B+)	68
3.5 (B)	64
3 (B-)	59
2.5 (C+)	52
2 (C)	45
1.5 (D+)	38
1 (D)	30
0 (F)	

Germany	Imperial
1.0	90
1.3	80
1.7	70
2.0	65
2.3	60
2.7	55
3.0	50
3.3	45
3.7	40
4.0	37
4.3	30

Final Degree Classifications

Third – a student must achieve an aggregate mark of 40%

Lower Second – a student must achieve an aggregate mark of 50%

Upper Second – a student must achieve an aggregate mark of 60%

First - a student must achieve an aggregate mark of 70%

Year	% Year Weighting	Module	% Module Weighting
Year One	8.3%	Introduction to Chemistry	13.3r%
		Inorganic Chemistry 1	13.3r%
		Organic Chemistry 1	13.3r%
		Physical Chemistry 1	13.3r%
		Chemistry Coursework 1	36.7r%
		1 x module from elective group (A)*	10%
Year Two	25%	Inorganic Chemistry 2	18.3r%
		Organic Chemistry 2	18.3r%
		Physical Chemistry 2	18.3r%
		Chemistry Coursework 2	35%
		1 x module from elective group (B)*	10%
Year Three**	3.33%	Advanced Chemistry	33.3%
		Advanced Chemistry Research Topics	20%
		Chemistry Coursework 3	46.7%
Year Three***	3.33%	Advanced Chemistry	31.7r%
		Advanced Chemistry Research Topics	19%
		Chemistry Coursework 3 for linguists	39.7r%
		1 x module from elective group (C)	9.5r%
Year Four	0%	Year in Industry	100%
Year Five	3.33%	Year Abroad	100%

*Students taking research abroad in a **non-English speaking institution** are normally required to take a language elective.

** For students taking research abroad in an **English speaking** institution.

*** For students taking research abroad in a **non-English speaking** institution.

Indicative Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
CHEM40001	Introduction to Chemistry	CORE	1	73	127	0	200	100%	0%	0%	4	8
CHEM40002	Inorganic Chemistry 1	CORE	1	36	164	0	200	100%	0%	0%	4	8
CHEM40003	Organic Chemistry 1	CORE	1	37	163	0	200	100%	0%	0%	4	8
CHEM40004	Physical Chemistry 1	CORE	1	56	144	0	200	100%	0%	0%	4	8
CHEM40005	Chemistry Coursework 1	CORE	1	160	390	0	550	0%	68.53%	31.47%	4	22
CHEM40007	Medicinal Chemistry	ELECTIVE (A)	1	27	123	0	150	100%	0%	0%	4	6
CHEM40008	Maths and Physics for Chemists 1	ELECTIVE (A)	1	55	95	0	150	85%	15%	0%	4	6
-	Horizons (Languages only)	ELECTIVE (A)	1	Variable			150	Variable				6
CHEM50001	Inorganic Chemistry 2	CORE	2	67	208	0	275	100%	0%	0%	5	11
CHEM50002	Organic Chemistry 2	CORE	2	79	196	0	275	100%	0%	0%	5	11
CHEM50003	Physical Chemistry 2	CORE	2	75	200	0	275	100%	0%	0%	5	11
CHEM50004	Chemistry Coursework 2	CORE	2	219	308	0	525	0%	39.8%	60.2%	5	21
CHEM50007	Maths and Physics for Chemists 2	ELECTIVE (B)	2	60	90	0	150	100%	0%	0%	5	6
CHEM50008	Medicinal Chemistry 2	ELECTIVE (B)	2	32	118	0	150	100%	0%	0%	5	6

Indicative Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
-	Business for Professional Engineers and Scientists (BPES)	ELECTIVE (B)	2	Variable			150	Variable				6
-	Horizons (Languages only)	ELECTIVE (B)	2	Variable			150	Variable				6
HSCS2001	Communicating Science	ELECTIVE (B)	2	40	110	0	150	0%	80%	20%	5	6
HSCS2010	Science and Policy	ELECTIVE (B)	2	40	110	0	150	0%	80%	20%	5	6
HSCS2002	Creativity, Innovation and Invention	ELECTIVE (B)	2	40	110	0	150	0%	60%	40%	5	6
CHEM50009	Undergraduate Ambassadors Scheme	ELECTIVE (B)	2	12	87	51	150	0%	90%	10%	5	6
CHEM60001	Advanced Chemistry	CORE	3	82	418	0	500	100%	0%	0%	6	20
CHEM60002	Advanced Chemistry Research Topics	CORE	3	97	203	0	300	100%	0%	0%	6	12
CHEM60009	Chemistry Coursework 3	CORE*	3	210	490	0	700	0%	45%	55%	6	28
CHEM60009	Chemistry Coursework 3 for linguists	CORE**	3	180	445	0	625	0%	45%	55%	6	25
-	Horizons (Languages only)	ELECTIVE (C)	3	Variable			150	Variable				6
	Year in Industry	CORE	4	0	0	1500	1500	0%	100%	0%	6	60

Indicative Module List												
Code	Title	Core/ Elective	Year	L&T Hours	Ind. Study Hours	Place- ment Hours	Total Hours	% Written Exam	% Course- work	% Practical	FHEQ Level	ECTS
-	Year Abroad	CORE	5	Variable			Variable			7	65	

* For students taking research abroad in an **English speaking** institution.

** For students taking research abroad in a **non-English speaking** institution.

Supporting Information

The Programme Handbook is available at:

<http://www.imperial.ac.uk/chemistry/undergraduate/course-structure-and-content/>

The Module Handbook is available through the Virtual Learning Environment module "Course Summaries 2017/18"

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

www.imperial.ac.uk/study/ug/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>

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".

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

Imperial College London is regulated by the Higher Education Funding Council for England (HEFCE)

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

Modification

Changes to the assessment of module CHEM40008 'Maths and Physics for Chemists Year 1'	Programmes Committee	21 March 2017	PC.2016.75
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