

MSci Chemistry with Medicinal Chemistry

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 Medicinal Chemistry			
Programme Code	F124			
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	4 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:	240	CATS:	480
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	November 2016			

Description of Programme Contents

These courses combine our Single Honours Chemistry degree (F103) with modules that focus particularly on the industrial development, production and quality control of new drugs. They are designed for students intending to work in the pharmaceutical and similar industries, and for those interested in chemical research in fields allied to medicine.

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.

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		None
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
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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 Years 3 and 4 • Accompanying class tutorial sessions in years 3 and 4 • 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 • The final year research project involves regular update and feedback meetings with the project supervisor 	
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 55% overall weighted average across all written exams (i.e. inorganic, organic and physical chemistry 2 and the ancillary) to proceed into the third year

Year Three

A student must:

- Achieve an aggregate mark of at least 40% in the core modules 'Advanced Chemistry' and 'Chemistry Coursework 3 for Medicinal Chemists'
- Achieve an aggregate mark of at least 40% in the module 'Advanced Chemistry Research Topics for Medicinal Chemists'

Year Four

A student must:

- Achieve an aggregate mark of at least 40% in the 'Chemistry Coursework 4 for Medicinal Chemists' module
- Achieve an aggregate mark of at least 40% in each module

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	7.7%	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%
		Medicinal Chemistry 1	10%
Year Two	23.1%	Inorganic Chemistry 2	18.3r%
		Organic Chemistry 2	18.3r%
		Physical Chemistry 2	18.3r%
		Chemistry Coursework 2 for Medicinal Chemists	35%
		Medicinal Chemistry 2	10%
Year Three	30.8%	Advanced Chemistry	33.3%
		Advanced Chemistry Research Topics for Medicinal Chemists	20%
		Chemistry Coursework 3 for Medicinal Chemists	46.7%
Year Four	38.5%	From Molecules to Medicine	8.33%
		Chemistry Coursework 4 for Medicinal Chemists	75%
		2 x modules from elective group (A)	8.33% each

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	CORE	1	27	123	0	150	100%	0%	0%	4	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
CHEM50006	Chemistry Coursework 2 for Medicinal Chemists	CORE	2	219	308	0	525	0%	39.8%	60.2%	5	21
CHEM50008	Medicinal Chemistry 2	CORE	2	32	118	0	150	100%	0%	0%	5	6
CHEM60001	Advanced Chemistry	CORE	3	82	418	0	500	100%	0%	0%	6	20
CHEM60004	Advanced Chemistry Research Topics for Medicinal Chemists	CORE	3	97	203	0	300	100%	0%	0%	6	12

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
CHEM60007	Chemistry Coursework 3 for Medicinal Chemists	CORE	3	253	447	0	700	0%	45%	55%	6	28
CHEM70010	From Molecules to Medicine	CORE	4	15	110	0	125	0%	60%	40%	7	5
CHEM70001	Chemistry Coursework 4 for Medicinal Chemists	CORE	4	791	334	0	1125	0%	59%	41%	7	45
CHEM70002	Advanced Catalysis	ELECTIVE (A)	4	12	113	0	125	0%	0%	100%	7	5
CHEM70004	Chemistry of Nanomaterials	ELECTIVE (A)	4	15	110	0	125	0%	0%	100%	7	5
CHEM70005	Renewable Energy from Solar Cells to Fuel Cells	ELECTIVE (A)	4	12	113	0	125	100%	0%	0%	7	5
CHEM70006	Advanced Stereo-Chemistry, Synthesis and Biosynthesis	ELECTIVE (A)	4	12	113	0	125	0%	100%	0%	7	5
CHEM70007	Molecular Imaging	ELECTIVE (A)	4	24	101	0	125	100%	0%	0%	7	5
CHEM70008	Robot Chemistry	ELECTIVE (A)	4	13	112	0	125	0%	100%	0%	7	5
CHEM70009	Plastic Electronics from Materials Chemistry to Device Applications	ELECTIVE (A)	4	12	113	0	125	100%	0%	0%	7	5
CHEM70011	Membrane Biophysics	ELECTIVE (A)	4	12	113	0	125	100%	0%	0%	7	5

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 2016/17"

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/>

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