Imperial College London

WELCOME TO THE **DEPARTMENT OF CHEMISTRY**

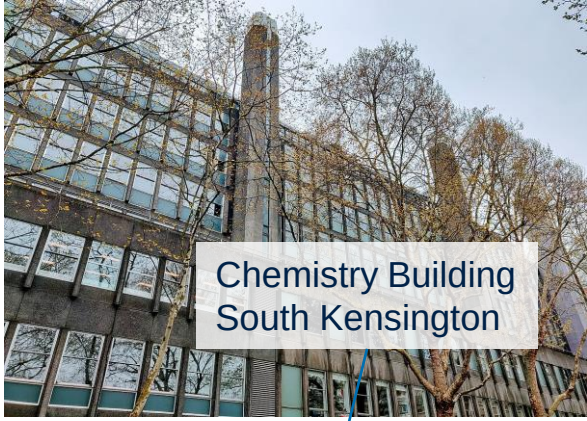
CONTACT: CHEMUGADMIN@IMPERIAL.AC.UK

DR LUKE DELMAS
DR SARAH JOHNSON

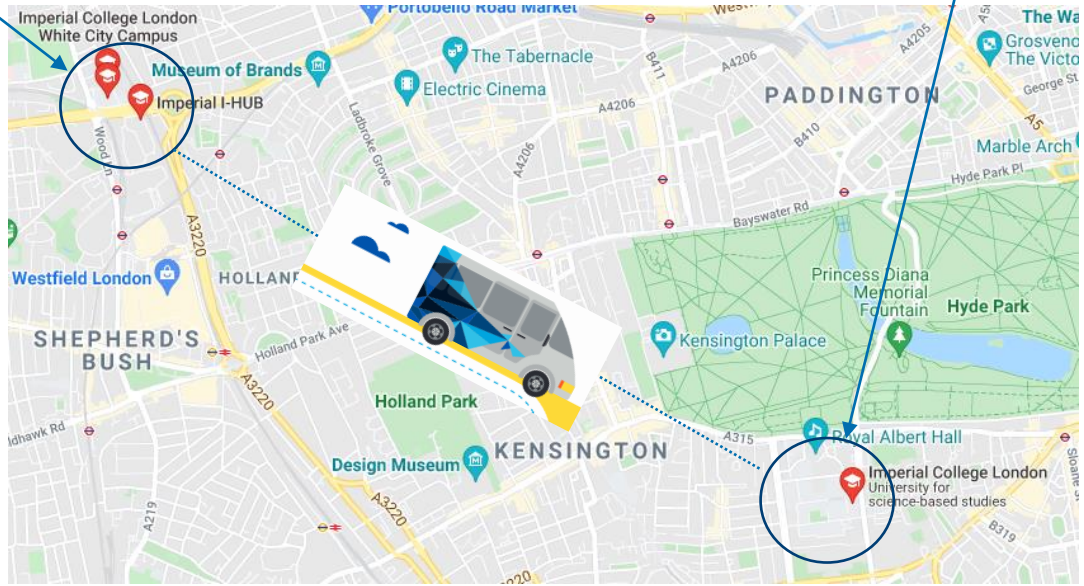
Molecular Sciences Research Hub (MSRH), White City

Chemistry Department split across two campuses

(30 mins by car)



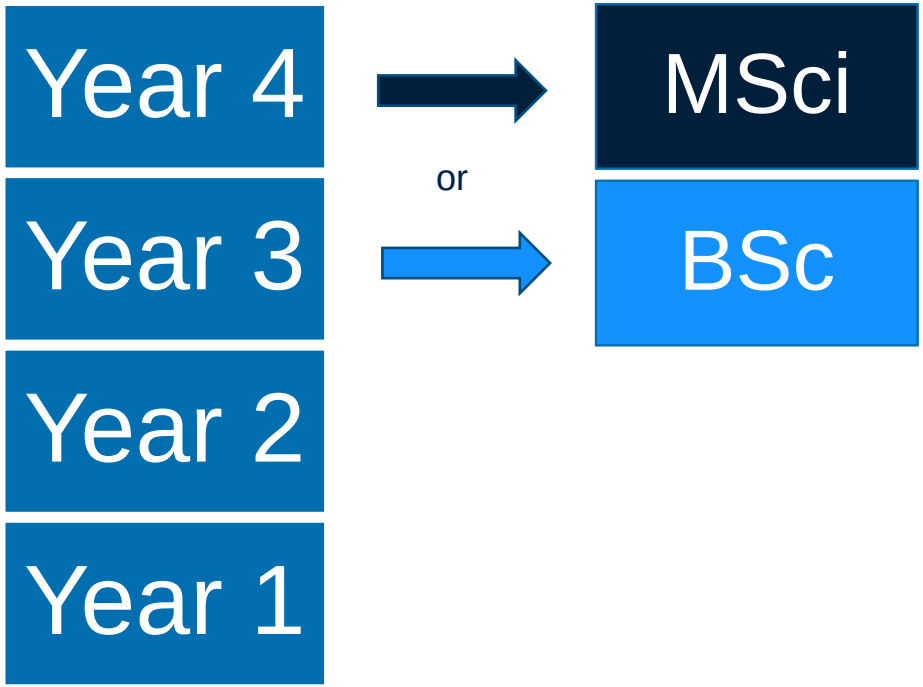
Chemistry Building South Kensington



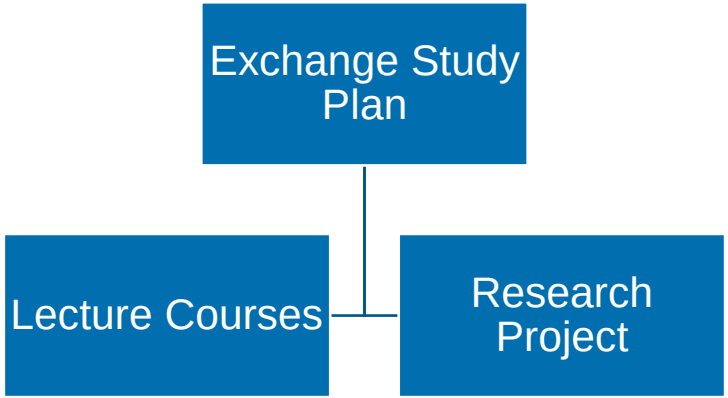
Research Project at MSRH

Imperial College London

DEGREE STREAMS AT IMPERIAL



- **Outgoing** Study abroad students complete a replacement year abroad, including final year research project
- **Incoming** exchange students typically align with either year 3 or 4 (flexible study plan)



TIMELINE FOR EXCHANGES: LECTURE MODULES

- Quite flexible on length/timing of exchange
- But must consider assessment periods

	Term 1			Term 2			Term 3		
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Year 3 (BSc)	Teaching (Adv Topics 1)			Exams	Teaching (Adv Top. 2)			Exams	
Year 4 (Msci)	Teaching (MSci modules)			Assessment					

TAUGHT LECTURE MODULES

*See Updated Spreadsheet from Luke/Sarah

	Term 1			Term 2			Term 3		
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Year 3 (BSc)	Teaching (Adv Topics 1)			Exams	Teaching (Adv Top. 2)			Exams	
Year 4 (Msci)	Teaching (MSci modules)			Assessment					

Year 3 (BSc)

Pick **5** topics

Adv Topics 1
15 ECTS
(Autumn)

- Advanced Synthesis
- Advanced Transition Metal Chemistry
- Electronic Properties of Solids
- Lanthanide and Actinide Chemistry
- Materials Chemistry
- Molecular Reaction Dynamics
- Pericyclics
- Reactive Intermediates
- Soft Condensed Matter
- Solvents and Solvent Effects in Chemistry

Adv Topics 2
15 ECTS
(Spring)

- Bioinorganic Chemistry
- Functional Inorganic Materials
- Introduction to Chemical Biology
- Lyotropics
- Process Chemistry
- Reaction Kinetics
- Statistical Mechanics
- Strategies in Cancer Chemotherapy
- Strategies in Drug Discovery
- Time-dependent Quantum Mechanics and Spectroscopy

Year 4 (MSci)

Pick individual 5 ECTS courses (no minimum)

- CHEM70001 - Advanced Catalysis
- CHEM70004 - Advanced Interfacial Science
- CHEM70005 - Advanced Stereo-Chemistry, Synthesis and Biosynthesis
- CHEM70006 - Molecular Imaging
- CHEM70007 - From Molecules to Medicine
- CHEM70010 - Sustainable Chemistry
- CHEM70048 - Chemistry of Nanomaterials
- CHEM70049 - Membrane Biophysics
- CHEM70050 - Plastic Electronics from Materials Chemistry to Device Applications
- CHEM70051 - Renewable Energy from Solar Cells to Fuel Cells

Exchange students can select 1 x 5 ECTS module from

Imperial College Business School

https://www.imperial.ac.uk/business-school/programmes/undergraduate-study/bpes-programme/

Imperial College London

Detailed information on chemistry lecture modules found here: https://chemunity.imperial.ac.uk/degree-overview/

Year 1 2 3 4

Module Weightings and Assessments

BACK

Year 4

FHEQ Level 7 60 ECTS total

Term 1 (11 weeks)

3 (9 weeks)

Welcome Week

Specialist Chemistry Cour

CHEM9700X - 5 + 5 + 5 ECTS = 15 ECTS

Choose 3 of the modules below (finalise choices ca. 4
(note, restrictions of choice may apply depending on deg

CHEM97002 - Advanced Catalysis
CHEM97003 - Chemistry of Nanomateri
CHEM97004 - Renewable Energy from Solar Cells
CHEM97005 - Advanced Stereo-Chemistry, Synthesis
CHEM97006 - Molecular Imaging
CHEM97008 - Plastic Electronics from Materials Chemistry
CHEM97009 - From Molecules to Medici
CHEM97010 - Membrane Biophysics
CHEM97011 - Sustainable Chemistry
CHEM97015 - Advanced Interfacial Scie
CHEM97035 - Supramolecular Chemist

Practical Chemistry 4

CHEM9700X - 45 ECTS

(note, all MSci students complete their fina
MSci Research Projects in both Term 1 and Term 2, as

Practical Chemistry 4 (cont.)

(cont.)

(note, all MSci students will submit their dissertations, deliver their project presentation, and complete their oral viva)

Renewable Energy: From Solar Cells to Fuel Cells

This course will examine aspects of renewable energy generation relevant to the chemistry context including the generation of electricity and fuels from solar energy, the storage of that electricity in batteries and other electrochemical systems, and the storage of the fuels in suitable chemical form followed by the conversion of the fuels back to electricity within fuel cells. The course will be taught through both lectures, and self study of relevant literature.

At the end of the course, the students should be able to:

- Critically assess the requirements for efficient energy storage as either a fuel or in electrochemical devices
- Be able to assess the chemical requirements of materials for energy applications including aspects associated with efficiency, durability and elegance of approach
- Demarcate the chemical and material properties required for different energy systems
- Describe the fundamental processes associated with energy capture, conversion and storage and how these processes are facilitated by the underlying materials
- Identify key areas where chemistry research is contributing to the development of new sustainable energy technologies

Course Content

1 [Introduction]. Sustainable energy overview. introduction to solar energy
2 [Photosynthesis]. Biological solar energy conversion. Molecular processes. Bioenergetics / thermodynamics
3 [Photovoltaic solar energy conversion] basics of device design and function. Existing technology overview
4 [New materials for photovoltaics]. Consideration of new materials for solar cells – organic semiconductors, perovskites, dye sensitised, quantum dots. Discussion of limitations / advantages / challenges.
5 [artificial photosynthesis] approaches and concepts. Efficiency measurements. Photoelectrochemistry of semiconductors
6 [artificial photosynthesis2] case studies of state of the art materials / approaches. Discussion of limitations / advantages / challenges.
7 [Hydrogen and other electrolytic fuels as an energy carrier]
The use of hydrogen as an energy carrier. The production of other energy carriers through electrolysis (ammonia, formate etc). Hydrogen safety. Storage and transport of Hydrogen and other chemical systems Comparison of hydrogen to other fuels.
8 [Batteries and Electrolysers/Fuel cells introduction]

click on a module to learn more about it

Note – current students should check the Scheme for the Award of Honours and Module Handbooks for most up-to-date and accurate information

Imperial College London

TEACHING & LEARNING

MAJORITY IN-PERSON LECTURES

SMALL GROUP TEACHING FACE TO FACE

ONLINE/ FLIPPED CONTENT

RESEARCH PROJECTS AT MSRH

Imperial College London

Research Projects:

Typically 15 (1 term), 25 (2 terms), or 45 ECTS (Full academic year)

- Usually assessed by written thesis if marked by Imperial
- Otherwise, can be pass/fail and assessed by sending institution
- Students set up these placements by contacting academics directly (we can help!)

Further information on research groups in the Department:
https://www.imperial.ac.uk/chemistry/research/research-themes/

ACADEMIC AND WELLBEING:

Personal tutors

Student Rep Network

Student Experience Officer

Counselling service

Exchange programme coordinated by Luke Delmas, Sarah Johnson, and Adrian Hawksworth

OTHER SUPPORT:

Careers Service

Centre for Academic English

International Student Office