

ANNEX 2: PROGRAM DESCRIPTION/MACROPLAN

Dual Master's Degree Scheme

The macroplan depicts the 2-year MSc dual degree structure in Chemistry at Queen's University and in Chemie at Universität Stuttgart. It shows the compulsory and elective courses in each term as well as the prerequisites for students wishing to spend their 2nd year at the partner institution.

BSc Chemistry—SSP (Queen's University)

1st Year	CHEM 112 General Chemistry 6 units (48 L, 36 Lb, 36 T, 72 online)	PHYS 106 General Physics 6 units (72 L, 36 Lb, 36 T)	MATH 123 Differential and Integral Calculus I 3 units (36 L, 12 T)	MATH 110 Introduction to Linear Algebra 6 units (72, 24 T)	Elective Course 3 units
			MATH 124 Differential and Integral Calculus II 3 units (36 L, 12 T)		Elective Course 3 units
2nd year	CHEM 211 Main Group Chemistry 3 units (36 L, 36 Lb)	CHEM 212 Principles of Chemical Reactivity 3 units (36 L, 18 Lb)	CHEM 213 Introduction to Chemical Analysis 3 units (36 L, 36 Lb)	Elective Course 3 units	Elective Course 3 units
	CHEM 221 Materials, Solutions and Interfaces 3 units (36 L, 36 Lb)	CHEM 222 Methods of Structure Determination 3 units (36 L, 18 T)	CHEM 223 Organic Reactions 3 units (36 L, 36 Lb)		Elective Course 3 units
3rd year	CHEM 311 Mechanistic Organic Chemistry 3 units (36 L, 12 T)	CHEM 312 Transition Metal Chemistry 3 units (36 L, 12 T)	CHEM 313 Quantum Mechanics 3 units (36 L, 12 T)	CHEM 397 Experimental Chemistry 6 units (144 Lb, 12 T)	Elective Course 3 units
	CHEM 321 Instrumental Chemical Analysis 3 units (36 L)	CHEM 322 The Chemical Bond: Computation and Spectroscopy 3 units (36 L, 12 T)	CHEM 323 Biological Chemistry 3 units (36 L)		Elective Course 3 units
4th year	CHEM 412 Statistical Mechanics 3 units (36 L)	CHEM 422 Synthetic Organic Chemistry 3 units (36 L, 12 T)	CHEM 424 Polymer Chemistry 3 units (36 L)	CHEM 3XX or 4XX Elective Chemistry 3 units	CHEM 497 Research Project 6 units (216 Lb)
	CHEM 413 Computational Chemistry 3 units (36 L)	CHEM 423 Topics in Inorganic and Organometallic Chemistry 3 units (36 L)	CHEM 3XX or 4XX Elective Chemistry 3 units	Elective Course 3 units	

Double MSc Chemistry (USTUTT-Queen's), Queen's students

5th year	CHEM 803 Principles of Scientific Communication 3 units	Elective Chemistry Module I 1.5 units	Elective Chemistry Module II 1.5 units	Elective Chemistry Module III 1.5 units
		Elective Chemistry Module IV 1.5 units	Elective Chemistry Module V 1.5 units	Elective Chemistry Module VI 1.5 units
6th year at Stuttgart	Research Lab I	Elective Chemistry Course 3 units	Master Thesis (max. 900 Lb)	
	Research Lab II			

BSc Chemistry (Universität Stuttgart)

1st Year	Introduction to Chemistry 12 CP (90 L, 30 T)	Introductory Chemistry Lab 6 CP (180 Lb)	Mathematics 12 CP (75L, 60T)		Introduct. Physics 6 CP (60L)	
	Inorganic and Analytical Chemistry 12 CP (60 L, 30 T, 120 Lb)	Thermodynamics, Electrochemistry and Kinetics (Phys. Chem. I) 12 CP (60 L, 30 T, 90 Lb)				
2nd year	Organic Chemistry I 12 CP (60 L, 30 T, 150 Lb)	Instrumental Analytics 6 CP (15 L, 30 T, 50 Lb)	Biochemistry 6 CP (60 L)	Theoretical Chemistry 6 CP (45 L, 15 T)	Toxicology 3 CP (30 L)	Physics Lab 3 CP (60 Lb)
	Organic Chemistry II 12 CP (60 L, 30 T, 130 Lb)			Macromolecular Chemistry 6 CP (45 L, 15 T)	Chemical Technology 6 CP (60 L, 15 T)	
3rd year	Advanced Inorganic Chemistry 12 CP (70L, 30T, 80Lb)	Atoms, Molecules and Spectroscopy (Phys. Chem. II) 12 CP (60L, 45 T, 60 Lb)		Chem. Technology Lab 6 CP (140 Lb)		
	Structure Determ. 3 CP (15 L, 15 T)	Elective Course (from Bio, IT, Physics, or Engineering) 6 CP	Elective Courses ("Soft Skills") 6 CP	Bachelor Thesis 12 CP (max. 360 Lb)		

Double MSc Chemistry (USTUTT-Queen's), Stuttgart students

4th year	Advanced Inorganic Synthesis 9 CP (45 L, 120 Lb)		Advanced Organic Synthesis 9 CP (45 L, 120 Lb)		Chemical and Biochemical Technology 6 CP (60 L)	Polymer Lab 6 CP (120 Lb)
	Physical Chemistry III (Statistical Thermodynamics, Scattering and Diffraction) 12 CP (60 L, 30 T, 90 Lb)			Computational Chemistry 6 CP (30 L, 60 Lb)		Elective Chemistry Course I 6 CP
5th year at Queen's	CHEM 803 Principles of Scientific Communication 6 CP	Elective Chemistry Module I 3 CP	Elective Chemistry Module II 3 CP	Research Lab I 6 CP (180 Lb)	Master Thesis 30 CP (max. 900 Lb)	
		Elective Chemistry Module III 3 CP	Elective Chemistry Module IV 3 CP	Research Lab II 6 CP (180 Lb)		