

Chemistry
Applicable to students admitted in 2018-19

Major Programme Requirement

Students are required to complete a minimum of 58 units (70 units for Enrichment Stream, 64 units for Testing and Accreditation Stream) of courses as follows:

	Units
1. Faculty Package (for Major, Enrichment Stream, and Testing and Accreditation Stream): Group B: CHEM1070 Group C: MATH1520 (preferred) or 1010 or 1550 A course from the following Group A: LSCI1000 or 1001 or 1002 Group D[a]: PHYS1001 or 1002 or 1111 Group E: STAT1011 or 1012	9

Testing and Accreditation Stream

2. Required Courses: CHEM2120, 2200, 2270, 2300, 2310, 2320, 2400, 2408, 2820, 2830, 2850, 3130, 3220, 3320, 3410, 3810, 3830, 3860, 3870, 4400, 4430, 4440, 4470, 4788	47
3. Elective Courses:	8
(a) CHEM4780 or 4784[b]	
(b) One capstone courses combination from: CHEM4030/4040 or CHEM4980/4990 (with topic related to laboratory testing and approval from the Department)	
(c) One course from the following lists[b]: <u>Undergraduate electives:</u> CHEM3230, 3330, 4100, 4200, 4280, 4302, 4630, 4640, 4710, 4730, 4785, 4786 <u>CHEM courses at 5000 level</u> (with approval from the Department): CHEM5080, 5301, 5302, 5530, 5540, 5550, 5560, 5620, 5630, 5642, 5660, 5680, 5780, 5781, 5782, 5783, 5784, 5785, 5910, 5920, 5930 <u>Non-CHEM courses:</u> BCHE4010#, CMBI4002#, ENSC4525#, 4535#, ESSC3220#, PHYS3021#, 3022#, 4031#	

Total: 64

Explanatory Notes:

1. CHEM courses at 2000 and above level as well as those labeled as # will be included in the calculation of Major GPA for honours classification.
2. Potential students majoring in Chemistry are strongly recommended to take CHEM1870 as basic training to prepare for laboratory classes in upper years.
3. A student in the final year of attendance may, under special circumstances and with written approval from the Department, select CHEM4480 and/or 4490 to substitute up to two units of any lecture or laboratory courses in the Chemistry Programme.

[a] All Chemistry students are required to take at least one course from PHYS1001, 1002

	and 1111, including the ones listed under the Faculty Package.
[b]	Students who have taken both CHEM4780 and 4784 can use one of the courses to fulfill the Elective Courses requirement as prescribed in 3(c).
[c]	Students may select research-oriented course(s), as approved by the Major Programme, to substitute up to 4 units for fulfillment of Research Courses requirement.
[d]	Students must complete any exchange/research/internship programme(s) offered by the University, Colleges, the Faculty of Science or Major Programme, as approved by the Major Programme, to fulfill the Experiential Learning requirement. Students are responsible for the extra costs incurred in the exchange/research/internship programme(s).

Chemistry (Testing and Accreditation Stream)		
	Recommended Course Pattern	Units
First Year of Attendance	1 st term Faculty Package: CHEM1070 Major Required: Major Elective(s):	3
	2 nd term Faculty Package: MATH1520 or 1010 or 1550; a course from Group A, D, E Major Required: Major Elective(s):	6
Second Year of Attendance	1 st term Major Required: CHEM2120, 2200, 2310, 2820, 2850 Major Elective(s):	10
	2 nd term Major Required: CHEM2270, 2300, 2320, 2400, 2408, 2830 Major Elective(s):	11
Third Year of Attendance	1 st term Major Required: CHEM3220, 3320, 3410, 3810, 3830, 3870 Major Elective(s):	12
	2 nd term Major Required: CHEM3130, 3860 Major Elective(s): one elective course	4 2
Fourth Year of Attendance	1 st term Major Required: CHEM4400, 4440, 4470 Major Elective(s): CHEM4030 (or 4980), CHEM4780 (or 4784)	6 2
	2 nd term Major Required: CHEM4430, 4788 Major Elective(s): CHEM4040 (or 4990)	4 4
Total (including Faculty Package):		64

Course List

<i>Course Code</i>	<i>Course Title</i>	<i>Unit(s)</i>
CHEM1070	Principles of Modern Chemistry	3
CHEM1072	General Chemistry	3
CHEM1280	Introduction to Organic Chemistry and Biomolecules	3
CHEM1380	Basic Chemistry for Engineers	3
CHEM1870	General Chemistry Laboratory	2
CHEM2120	Main Group Chemistry	2
CHEM2200	Organic Functional Groups: Structure and Reactivity	3
CHEM2270	Student Oriented Teaching	1
CHEM2300	Thermodynamics and Chemical Equilibrium	3
CHEM2310	Atoms and Molecules	3
CHEM2320	Fundamentals of Spectroscopic Analysis	2
CHEM2382	Chemistry of Life	2
CHEM2400	Analytical Chemistry	2
CHEM2408	Analytical Chemistry Laboratory I	2
CHEM2820	Organic Chemistry Laboratory I	2
CHEM2822	Introductory Organic Chemistry Laboratory	1
CHEM2830	Physical Chemistry Laboratory I	2
CHEM2850	Inorganic Chemistry Laboratory I	2
CHEM3130	Transition Metal Chemistry	3
CHEM3220	Organic Reactions: Reactivity and Selectivity	2
CHEM3230	Conjugated Molecules and Synthetic Polymers	2
CHEM3320	Chemical Kinetics	3
CHEM3330	Molecular Spectroscopy	2
CHEM3410	Instrumental Analysis	3
CHEM3810	Organic Chemistry Laboratory II	2
CHEM3820	Organic Chemistry Laboratory III	2
CHEM3830	Physical Chemistry Laboratory II	2
CHEM3840	Physical Chemistry Laboratory III	2
CHEM3860	Inorganic Chemistry Laboratory II	2
CHEM3870	Analytical Chemistry Laboratory II	2
CHEM4030	Problem-based Learning I	0
CHEM4040	Problem-based Learning II	4
CHEM4100	Advanced Inorganic Chemistry	3
CHEM4200	Bioorganic Chemistry and Chemical Biology	2
CHEM4280	Chemistry in Biofuel	2
CHEM4302	Statistical Thermodynamics	2
CHEM4400	Advanced Analytical Chemistry	2
CHEM4430	Accreditation of Laboratory Tests	2
CHEM4440	Food Testing and Environmental Analysis	3
CHEM4470	Internship in Accredited Laboratory	2
CHEM4471	Internship	2
CHEM4480	Undergraduate Special Project I	1
CHEM4490	Undergraduate Special Project II	1
CHEM4630	Asymmetric Organic Synthesis	2
CHEM4640	Pharmaceutical Chemistry	2
CHEM4710	Quantum Chemistry	2
CHEM4730	Special Topics in Chemistry	2
CHEM4780	Mass Spectrometry	2

CHEM4784	Bioanalytical Methods	2
CHEM4785	Industrial Chemistry	2
CHEM4786	Principles and Applications of Coating Chemistry	2
CHEM4788	Chemical Applications in Forensic Science	2
CHEM4960	Research in Chemical Science I	2
CHEM4970	Research in Chemical Science II	2
CHEM4980	Undergraduate Thesis I	0
CHEM4990	Undergraduate Thesis II	4
CHEM5080	Introduction to Macromolecules	2
CHEM5301	Colloids and Surface Chemistry	2
CHEM5302	Statistical Mechanics	2
CHEM5530	Advanced Organometallic Chemistry	2
CHEM5540	Advanced Bioinorganic Chemistry	2
CHEM5550	Organometallic Chemistry of f-Block Elements	2
CHEM5560	Organometallic Chemistry and Catalysis of d-Block Elements	2
CHEM5620	Synthetic Methods in Organic Chemistry	2
CHEM5630	Synthesis of Natural Products	2
CHEM5642	Supramolecular Chemistry	2
CHEM5660	Advanced Organic Chemistry: Structures and Mechanisms	2
CHEM5680	Advanced Chemical Biology	3
CHEM5780	Mass Spectrometry of Biomolecules	2
CHEM5781	Advanced NMR Spectroscopy	2
CHEM5782	Principles of Biomolecular NMR Spectroscopy	2
CHEM5783	Introduction to Laser Spectroscopy	2
CHEM5784	Instrumental Analysis of Biomolecules	2
CHEM5785	Electrochemical Energy Conversion and Storage	2
CHEM5910	Current Topics in Chemistry	2
CHEM5920	Computational Chemistry	2
CHEM5930	Molecular Quantum Mechanics	2
STAR2000	Undergraduate Research in Science I	1
STAR2050	Seminar I	1
STAR3000	Undergraduate Research in Science II	2
STAR3050	Seminar II	1
STAR4000	Undergraduate Research in Science III	3
STAR4050	Seminar III	1