

Chemistry
Applicable to students admitted in 2013-14

Major Programme Requirement

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

	Units
1. Faculty Package (for Major and Enrichment Stream): Group B: CHEM1070 Group C: MATH1520 (preferred) or 1010 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
2. Required Courses : CHEM2120, 2200, 2270, 2300, 2310, 2320, 2400, 2408, 2820, 2830, 2850, 3130, 3220, 3320, 3410, 3810, 3830, 3860, 3870	37
3. Elective Courses:	12
(a) One combination from CHEM3230/3820 and CHEM3330/3840	
(b) One combination from CHEM4030/4040 and CHEM4980/4990 (with Department approval)	
(c) Two courses from the following lists:	
(i) <u>Undergraduate electives</u> : CHEM4100, 4200, 4400, 4430, 4630, 4640, 4710, 4720, 4730, 4780, 4781, 4784, 4785, 4788; or	
(ii) <u>Graduate electives</u> (with Department approval): CHEM5080, 5530, 5540, 5550, 5620, 5630, 5642, 5660, 5680, 5780, 5781, 5782, 5783, 5784, 5910, 5930	
Total:	58

Enrichment Stream

2. Required Courses: CHEM2120, 2200, 2270, 2300, 2310, 2320, 2400, 2408, 2820, 2830, 2850, 3130, 3220, 3230, 3320, 3330, 3410, 3810, 3820, 3830, 3840, 3860, 3870, 4980/4990	49
3. Elective Courses:	12
(a) Four undergraduate electives from: CHEM4100, 4200, 4400, 4430, 4630, 4640, 4710, 4720, 4730, 4780, 4781, 4784, 4785, 4788; and	
(b) Two graduate electives (with Department approval) from: CHEM5080, 5530, 5540, 5550, 5620, 5630, 5642, 5660, 5680, 5780, 5781, 5782, 5783, 5784, 5910, 5930	
Total:	70

Explanatory Notes:

- CHEM courses at 2000 level and above will be included in the calculation of Major GPA for honours classification.

2. Potential Chemistry Majors 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 by the Department, select CHEM4480 and/or 4490 to substitute up to two units of any lecture or laboratory courses in the Chemistry Programme.
- [a] Chemistry Majors who have not selected either one course from PHYS1001, 1002 or 1111 in the Faculty Package will have to take and pass one of them before graduation. This course will be used to substitute one elective course in the graduation requirement.

Chemistry		
	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; a course from Group A, D, E Major Required: Major Elective(s):	6
Second Year of Attendance	1 st term Major Required: CHEM2120, 2310, 2400, 2408, 2850 Major Elective(s):	10
	2 nd term Major Required: CHEM2200, 2270, 2300, 2320, 2820, 2830 Major Elective(s):	11
Third Year of Attendance	1 st term Major Required: CHEM3220, 3320, 3810, 3830 Major Elective(s):	8
	2 nd term Major Required: CHEM3130, 3410, 3860, 3870 Major Elective(s): CHEM3230, 3820 (or 3330, 3840)	8 4
Fourth Year of Attendance	1 st term Major Required: Major Elective(s): CHEM4030 (or 4980), one elective course	2
	2 nd term Major Required: Major Elective(s): CHEM4040 (or 4990), one elective course	6
Total (Major Requirement including Faculty Package):		58

Chemistry (Enrichment 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; a course from Group A, D, E	6

	Major Required: Major Elective(s):	
Second Year of Attendance	1 st term Major Required: CHEM2120, 2310, 2400, 2408, 2850 Major Elective(s):	10
	2 nd term Major Required: CHEM2200, 2270, 2300, 2320, 2820, 2830 Major Elective(s):	11
Third Year of Attendance	1 st term Major Required: CHEM3220, 3320, 3330, 3810, 3830, 3840 Major Elective(s):	12
	2 nd term Major Required: CHEM3130, 3230, 3410, 3820, 3860, 3870 Major Elective(s):	12
Fourth Year of Attendance	1 st term Major Required: Major Elective(s): CHEM4980, three elective courses	6
	2 nd term Major Required: Major Elective(s): CHEM4990, three elective courses	10
Total (Major Requirement including Faculty Package):		70

Minor Programme Title Chemistry	
Minor Programme Requirement	
Students are required to complete a minimum of 20 units of courses as follows:	
	Units
1. Required Courses: CHEM2120, 2200, 2300, 2400	8
2. Elective Courses:	
(a) Three laboratory courses from: CHEM2408, 2820, 2830, 2850	6
(b) At least six units from: CHEM3130, 3220, 3320, 3410, 4430, 4788, ENSC4525, 4535	6
Total:	20

Course List		
<i>Course Code</i>	<i>Course Title</i>	<i>Unit(s)</i>
CHEM1070	Principles of Modern Chemistry	3
CHEM1072	General Chemistry	3
CHEM1870	Essential Experimental Chemistry	2
CHEM1280	Introduction to Organic Chemistry and Biomolecules	3
CHEM1380	Basic Chemistry for Engineers	3
CHEM2270	Student Oriented Teaching	1
CHEM2120	Main Group Chemistry	2
CHEM2850	Inorganic Chemistry Laboratory I	2
CHEM2200	Organic Functional Groups: Structure and Reactivity	2

CHEM2820	Organic Chemistry Laboratory I	2
CHEM2310	Chemical Bonding	2
CHEM2300	Thermodynamics and Chemical Equilibrium	2
CHEM2830	Physical Chemistry Laboratory I	2
CHEM2320	Fundamentals of Spectroscopic Analysis	2
CHEM2382	Chemistry of Life	2
CHEM2400	Analytical Chemistry	2
CHEM2408	Analytical Chemistry Laboratory I	2
CHEM2822	Introductory Organic Chemistry Laboratory	1
CHEM3130	Transition Metal Chemistry	2
CHEM3860	Inorganic Chemistry Laboratory II	2
CHEM3220	Organic Reactions: Reactivity and Selectivity	2
CHEM3810	Organic Chemistry Laboratory II	2
CHEM3230	Physical Organic Chemistry and Aromatics	2
CHEM3820	Organic Chemistry Laboratory III	2
CHEM3320	Chemical Kinetics	2
CHEM3830	Physical Chemistry Laboratory II	2
CHEM3410	Instrumental Analysis	2
CHEM3870	Analytical Chemistry Laboratory II	2
CHEM3330	Molecular Spectroscopy	2
CHEM3840	Physical Chemistry Laboratory III	2
CHEM4030	Problem-based Learning I	0
CHEM4040	Problem-based Learning II	4
CHEM4480	Undergraduate Special Project I	1
CHEM4490	Undergraduate Special Project II	1
CHEM4980	Undergraduate Thesis I	0
CHEM4990	Undergraduate Thesis II	4
<i>Undergraduate Electives:</i>		
CHEM4100	Advanced Inorganic Chemistry	2
CHEM4200	Organic Chemistry in Life	2
CHEM4400	Advanced Analytical Chemistry	2
CHEM4430	Practices in Testing Laboratory	2
CHEM4630	Asymmetric Organic Synthesis	2
CHEM4640	Pharmaceutical Chemistry	2
CHEM4710	Quantum Chemistry	2
CHEM4720	Molecular Modelling	2
CHEM4730	Special Topics in Chemistry	2
CHEM4780	Mass Spectrometry	2
CHEM4781	NMR Spectroscopy	2
CHEM4784	Bioanalytical Methods	2
CHEM4785	Industrial Chemistry	2
CHEM4788	Chemical Applications in Forensic Science	2
<i>Graduate Electives:</i>		
CHEM5080	Introduction to Macromolecules	2
CHEM5530	Organometallic Chemistry	2
CHEM5540	Bioinorganic Chemistry	2
CHEM5550	Organolanthanide Chemistry	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	Introduction to Chemical Biology	2
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
CHEM5910	Current Topics in Chemistry	2
CHEM5930	Molecular Quantum Mechanics	2