

Chemistry
Applicable to students admitted in 2022-23

Major Programme Requirement

Students are required to complete a minimum of 68 units (72 units for Enrichment Stream, 70 units for Testing and Accreditation Stream) of courses as follows:

| | Units |
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| 1. Faculty Package (for Major, Enrichment Stream, and Testing and Accreditation Stream): Group B: CHEM1070 Group D: PHYS1001 or 1002 or 1111 A course from the following: Group A: LSCI1000 or 1001 or 1002 or 1012 Group C: MATH1520 (preferred) or 1010 (preferred) or 1018 or 1550 Group E: STAT1011 or 1012 | 9 |

Enrichment Stream

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| 2. Required Courses: CHEM1300, 2110, 2120, 2200, 2270, 2300, 2310, 2400, 2860, 2870, 3130, 3220, 3230, 3320, 3340, 3410, 3810, 3830, 3860, 3870, 4980/4990 (capstone courses) | 53 |
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| 3. Elective Courses: | 10 |
| (a) One course from CHEM3820 or 3840 | |
| (b) Four courses from the following lists, of which at most one non-CHEM course: <u>Undergraduate electives:</u> CHEM3420, 4100, 4110, 4200, 4280, 4302, 4400, 4440, 4471, 4630, 4640, 4710, 4730, 4780, 4784, 4785, 4786, 4788 <u>CHEM courses at 5000 level</u> (with approval from the Department): CHEM5080, 5301, 5302, 5550, 5560, 5620, 5642, 5680, 5780, 5784, 5785, 5910, 5920 <u>Non-CHEM courses:</u> BCHE3050#, CMBI4002#, ENSC4525#, 4535#, EESC3220#, PHYS3021#, 3022#, 4031#, 4440# | |

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| 4. Experiential Learning: At least 4 consecutive weeks of outside Hong Kong exposure [b] | --- |
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Total:

 72

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] 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.

[b] 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 (Enrichment Stream) | | |
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| | Recommended Course Pattern | Units |
| First Year of Attendance | 1 st term Faculty Package: CHEM1070, PHYS1001 or 1002 or 1111 Major Required: Major Elective(s): | 6 |
| | 2 nd term Faculty Package: A course from Group A, C, E Major Required: CHEM1300 Major Elective(s): | 3 2 |
| Second Year of Attendance | 1 st term Major Required: CHEM2120, 2200, 2300, 2860 Major Elective(s): | 12 |
| | 2 nd term Major Required: CHEM2110, 2270, 2310, 2400, 2870 Major Elective(s): | 12 |
| Third Year of Attendance | 1 st term Major Required: CHEM3220, 3320, 3410, 3810, 3830, 3870 Major Elective(s): | 14 |
| | 2 nd term Major Required: CHEM3130, 3230, 3340, 3860 Major Elective(s): CHEM3820 or 3840 | 9 2 |
| Fourth Year of Attendance | 1 st term Major Required: CHEM4980 Major Elective(s): Two elective courses | 0 4 |
| | 2 nd term Major Required: CHEM4990 Major Elective(s): Two elective courses | 4 4 |
| Total (including Faculty Package): | | 72 |

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 |
| CHEM1300 | Fundamentals in Physical Chemistry | 2 |
| CHEM1380 | Basic Chemistry for Engineers | 3 |
| CHEM1870 | General Chemistry Laboratory | 2 |
| CHEM2110 | Fundamentals of Spectroscopic Analysis | 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 |
| CHEM2382 | Chemistry of Life | 2 |
| CHEM2400 | Analytical Chemistry | 2 |
| CHEM2860 | Integrated Chemistry Laboratory I | 4 |
| CHEM2868 | Basic Integrated Chemistry Laboratory I | 2 |
| CHEM2870 | Integrated Chemistry Laboratory II | 4 |
| CHEM2878 | Basic Integrated Chemistry Laboratory II | 2 |
| CHEM3130 | Transition Metal Chemistry | 3 |
| CHEM3220 | Organic Reactions: Reactivity and Selectivity | 2 |
| CHEM3230 | Conjugated Molecules and Synthetic Polymers | 2 |
| CHEM3320 | Chemical Kinetics | 3 |
| CHEM3340 | Materials Chemistry | 2 |
| CHEM3410 | Instrumental Analysis | 3 |
| CHEM3420 | Accreditation of Laboratory Tests | 2 |
| CHEM3810 | Organic Chemistry Laboratory | 2 |
| CHEM3820 | Advanced Organic Chemistry Laboratory | 2 |
| CHEM3830 | Physical Chemistry Laboratory I | 2 |
| CHEM3840 | Physical Chemistry Laboratory II | 2 |
| CHEM3860 | Transition Metal Chemistry Laboratory | 2 |
| CHEM3870 | Instrumental Analysis Laboratory | 2 |
| CHEM3880 | Quality Testing Laboratory | 2 |
| CHEM4010 | Problem-based Learning in Testing and Accreditation I | 0 |
| CHEM4020 | Problem-based Learning in Testing and Accreditation II | 4 |
| CHEM4030 | Problem-based Learning in Chemistry I | 0 |
| CHEM4040 | Problem-based Learning in Chemistry II | 4 |
| CHEM4100 | Advanced Inorganic Chemistry | 3 |
| CHEM4110 | Frontier Organometallic Catalysis | 3 |
| CHEM4200 | Bioorganic Chemistry and Chemical Biology | 2 |
| CHEM4280 | Chemistry in Biofuel | 2 |
| CHEM4302 | Statistical Thermodynamics | 2 |
| CHEM4400 | Advanced Analytical Chemistry | 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 |

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| 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 |
| CHEM5550 | Organometallic Chemistry of f-Block Elements | 2 |
| CHEM5560 | Organometallic Chemistry & Catalysis of d-Block Elements | 2 |
| CHEM5620 | Synthetic Methods in Organic Chemistry | 2 |
| CHEM5642 | Supramolecular Chemistry | 2 |
| CHEM5680 | Advanced Chemical Biology | 3 |
| CHEM5780 | Mass Spectrometry of Biomolecules | 2 |
| CHEM5784 | Instrumental Analysis of Biomolecules | 2 |
| CHEM5785 | Electrochemical Energy Conversion and Storage | 2 |
| CHEM5910 | Current Topics in Chemistry | 2 |
| CHEM5920 | Computational Chemistry | 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 |