

Bachelor of Science in Biology and Chemistry Double Major Programme
Applicable to students admitted in 2022-23

Biology and Chemistry Double Major Programme

Major Programme Requirement

Students are required to complete a minimum of 89 units of courses as follows:

| | Units |
|---|-----------|
| 1. Faculty Package: Group A: LSCI1002 Group B: CHEM1070 Group D: PHYS1002 (preferred) or 1001 or 1111 | 9 |
| 2. Required Courses: | |
| (a) <u>1st Major: Biology</u> BCHE2030, BIOL2120, 2210, 2410, 2420, 3012, 3022, 3560, 3570, 3610, 3620, 4010, LSCI1012, 2002# | 32 |
| (b) <u>2nd Major: Chemistry</u> CHEM1300, 2110#, 2120#, 2200#, 2300#, 2400, 2868, 2878, 3130#, 3220, 3320, 3410 | 29 |
| 3. Elective Courses: | |
| (a) <u>1st Major: Biology</u> i) One laboratory course from BIOL2213, 2313 ii) At least 5 units chosen from the following: BIOL3310, 3410, 3420, 3510, 3530, 3630, 3710, 4120, 4230, 4240, 4260, 4310, 4420, 4510, 4520, 4610, 4901, LSCI3520# | 6 |
| (b) <u>2nd Major: Chemistry</u> i) Two laboratory courses from CHEM3810, 3830, 3860, 3870 ii) At least 5 units chosen from the following, of which at most one CHEM course at 3000 level: CHEM3230, 3340, 3420, 4100, 4110, 4200, 4300, 4303, 4400, 4440, 4630, 4640, 4710, 4780, 4784, 4785, 4788, ENSC4525, 4535 | 9 |
| 4. Research Component/ Capstone Course/ Final Year Project: BIOL4902, 4903 | 4 |
| Total: | 89 |

Explanatory Note:

1. BIOL courses at 2000 and above level as well as those labeled as # will be included in the calculation of Major GPA for honours classification.

| | Recommended Course Pattern | Units |
|---|---|--------------|
| First Year of Attendance | 1 st term | |
| | Faculty Package: LSCI1002, PHYS1002/1111 | 3-6 |
| | Major Required: CHEM2200 | 3 |
| | Major Elective(s): | |
| | 2 nd term | |
| | Faculty Package: CHEM1070, LSCI1002 (if not taken), PHYS1001 (if not taken PHYS1002/1111) | 3-6 |
| | Major Required: CHEM1300, LSCI1012 | 5 |
| | Major Elective(s): | |
| Second Year of Attendance | 1 st term | |
| | Major Required: BCHE2030, BIOL2120, CHEM2120, 2868, LSCI2002 | 12 |
| | Major Elective(s): | |
| | 2 nd term | |
| | Major Required: BIOL2210, 2410, 2420, CHEM2400, 2878 | 10 |
| | Major Elective(s): BIOL2213/2313 | 1 |
| Third Year of Attendance | 1 st term | |
| | Major Required: BIOL3012, 3560, 3610, CHEM2300, 3220 | 11 |
| | Major Elective(s): 1-2 CHEM laboratory course(s) (CHEM3810, 3830) | 2-4 |
| | 2 nd term | |
| | Major Required: BIOL3022, 3570, 3620, CHEM2110, 3130 | 11 |
| | Major Elective(s): 0-1 CHEM laboratory course (CHEM3860) | 0-2 |
| | one BIOL course | 2-3 |
| | one CHEM course | 2-3 |
| | Summer Session | |
| | Major Elective: 0-1 BIOL course (BIOL4901) | 0-2 |
| Fourth Year of Attendance | 1 st term | |
| | Major Required: BIOL4010, 4902, CHEM3320, 3410 | 11 |
| | Major Elective(s): 0-1 CHEM laboratory course (CHEM3870) | 0-2 |
| | one BIOL course | 2-3 |
| | one CHEM course | 2-3 |
| | 2 nd term | |
| | Major Required: BIOL4903 | 2 |
| | Major Elective(s): 0-1 BIOL course | 0-3 |
| | 0-1 CHEM course | 0-3 |
| Total (including Faculty Package): | | 89 |

| Course List | | |
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| <i>Course Code</i> | <i>Course Title</i> | <i>Unit(s)</i> |
| BCHE2030 | Fundamentals of Biochemistry | 3 |
| BIOL2120 | Cell Biology | 3 |
| BIOL2210 | Ecology | 3 |
| BIOL2213 | Ecology Laboratory | 1 |
| BIOL2313 | Genetics Laboratory | 1 |
| BIOL2410 | General Genetics | 2 |
| BIOL2420 | Population Genetics | 1 |
| BIOL3012 | Biodiversity Laboratory I | 2 |
| BIOL3022 | Biodiversity Laboratory II | 2 |
| BIOL3310 | Human Biology | 3 |
| BIOL3410 | General Microbiology | 3 |
| BIOL3413 | Microbiology Laboratory | 1 |
| BIOL3420 | Advanced Genetics and Epigenetics | 3 |
| BIOL3510 | Palaeobiology | 2 |
| BIOL3530 | Plant Physiology | 3 |
| BIOL3560 | Biology of Fungi and Non-Vascular Plants | 2 |
| BIOL3570 | Biology of Vascular Plants | 2 |
| BIOL3610 | Invertebrate Form and Function | 2 |
| BIOL3620 | Vertebrate Life | 2 |
| BIOL3630 | Animal Physiology | 3 |
| BIOL3710 | Marine Biology | 3 |
| BIOL4010 | Evolutionary Biology | 3 |
| BIOL4012 | Field and Environmental Biology | 2 |
| BIOL4032 | Physiological Investigations | 2 |
| BIOL4120 | Developmental Biology | 3 |
| BIOL4230 | Global Change Biology | 3 |
| BIOL4240 | Environmental Impact Assessment | 3 |
| BIOL4242 | Environmental Impact Assessment Laboratory | 2 |
| BIOL4260 | Conservation Biology | 3 |
| BIOL4310 | Human Genetics | 3 |
| BIOL4420 | Marine Microbial Ecology | 2 |
| BIOL4510 | Hong Kong Flora and Vegetation | 3 |
| BIOL4520 | Plant Metabolism and Metabolic Engineering | 2 |
| BIOL4610 | Foundation for Secondary School Biology Teaching | 3 |
| BIOL4901 | Senior Experimental Project I | 2 |
| BIOL4902 | Senior Experimental Project II | 2 |
| BIOL4903 | Senior Experimental Project III | 2 |
| BIOL4906 | Internship | 2 |
| BIOL4907 | Field Study | 2 |
| 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 |

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| 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 |
| CHEM4200 | Bioorganic Chemistry and Chemical Biology | 2 |
| CHEM4280 | Chemistry in Biofuel | 2 |
| CHEM4300 | Advanced Physical Chemistry | 2 |
| CHEM4303 | Introduction to Nanoscience and Nanotechnology | 2 |
| CHEM4400 | Advanced Analytical Chemistry | 2 |
| CHEM4440 | Food Testing and Environmental Analysis | 3 |
| CHEM4470 | Internship in Accredited Laboratory | 2 |
| CHEM4471 | Internship | 1 |
| 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 |

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| 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 |
| CHEM5301 | Colloids and Surface Chemistry | 2 |
| CHEM5303 | Recent Development of Nanoscience and Nanotechnology | 2 |
| CHEM5540 | Bioinorganic Chemistry | 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 |
| ENSC4525 | Advanced Environmental Chemistry | 3 |
| ENSC4535 | Chemical Treatment Processes | 3 |
| LSCI1012 | Introduction to Life Forms in the Biosphere | 3 |
| LSCI2002 | Basic Lab Tech in Life Science | 3 |
| LSCI3520 | Environmental and Biochemical Toxicology | 3 |