

# Bachelor of Science in Biology and Chemistry

## Double Major Programme

### Detailed Course List

Faculty Package (9 units)	
<ul style="list-style-type: none"> <li>Principles of Modern Chemistry</li> <li>Introduction to Biological Sciences</li> <li>Essential Physics <b>OR</b> General Physics <b>OR</b> Introduction to Mechanics, Fluids, and Waves (University Physics I)</li> </ul>	
Major Courses (76 units)	
<p style="text-align: center;"><b><i>Biology</i></b></p> <p><i>Required (32 units)</i></p> <ul style="list-style-type: none"> <li>Introduction to Life Forms in the Biosphere</li> <li>Fundamentals of Biochemistry</li> <li>Cell Biology</li> <li>Ecology</li> <li>General Genetics</li> <li>Population Genetics</li> <li>Basic Lab Tech in Life Science</li> <li>Biology of Fungi and Non-Vascular Plants</li> <li>Biology of Vascular Plants</li> <li>Invertebrate Form and Function</li> <li>Vertebrate Life</li> <li>Biodiversity Laboratory I</li> <li>Biodiversity Laboratory II</li> <li>Evolutionary Biology</li> </ul> <p><i>Electives (6 units)</i></p> <ul style="list-style-type: none"> <li>Ecology Laboratory <b>OR</b> Genetics Laboratory</li> <li>2-3 advanced and research related courses</li> </ul>	<p style="text-align: center;"><b><i>Chemistry</i></b></p> <p><i>Required (29 units)</i></p> <ul style="list-style-type: none"> <li>Fundamentals in Physical Chemistry</li> <li>Fundamentals of Spectroscopic Analysis</li> <li>Main Group Chemistry</li> <li>Organic Functional Groups: Structure and Reactivity</li> <li>Thermodynamics and Chemical Equilibrium</li> <li>Analytical Chemistry</li> <li>Basic Integrated Chemistry Laboratory I</li> <li>Basic Integrated Chemistry Laboratory II</li> <li>Transition Metal Chemistry</li> <li>Organic Reactions: Reactivity and Selectivity</li> <li>Chemical Kinetics</li> <li>Instrumental Analysis</li> </ul> <p><i>Electives (9 units)</i></p> <ul style="list-style-type: none"> <li>2 main theme laboratory courses</li> <li>2-3 advanced and research related courses</li> </ul>
Capstone Course (4 units)	
Senior Experimental Project <b>OR</b> Problem-based Learning in Chemistry	

### Examples of advanced and research related courses

#### ***Biology***

- Human Biology
- General Microbiology
- Advanced Genetics and Epigenetics
- Plant Physiology
- Animal Physiology
- Marine Biology
- Developmental Biology
- Global Change Biology
- Conservation Biology
- Human Genetics
- Marine Microbial Ecology
- Hong Kong Flora and Vegetation
- Plant Metabolism and Metabolic Engineering

#### ***Chemistry***

- Conjugated Molecules and Synthetic Polymers
- Materials Chemistry
- Accreditation of Laboratory Tests
- Frontier Organometallic Catalysis
- Bioorganic Chemistry and Chemical Biology
- Advanced Analytical Chemistry
- Food Testing and Environmental Analysis
- Asymmetric Organic Synthesis
- Pharmaceutical Chemistry
- Bioanalytical Methods
- Industrial Chemistry
- Chemical Applications in Forensic Science
- Advanced Environmental Chemistry
- Chemical Treatment Processes

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
BCHE2030	Fundamentals of Biochemistry	基礎生物化學	3
BIOL2120	Cell Biology	細胞生物學	3
BIOL2210	Ecology	生態學	3
BIOL2213	Ecology Laboratory	生態學實驗	1
BIOL2313	Genetics Laboratory	遺傳學實驗	1
BIOL2410	General Genetics	普通遺傳學	2
BIOL2420	Population Genetics	族群遺傳學	1
BIOL3012	Biodiversity Laboratory I	生物多樣性實驗 (一)	2
BIOL3022	Biodiversity Laboratory II	生物多樣性實驗 (二)	2
BIOL3310	Human Biology	人類生物學	3
BIOL3410	General Microbiology	普通微生物學	3
BIOL3420	Advanced Genetics and Epigenetics	遺傳學和表觀遺傳學	3
BIOL3530	Plant Physiology	植物生理學	3
BIOL3560	Biology of Fungi and Non-Vascular Plants	真菌及非維管束植物生物學	2
BIOL3570	Biology of Vascular Plants	維管植物生物學	2
BIOL3610	Invertebrate Form and Function	無脊椎動物型態及功能	2
BIOL3620	Vertebrate Life	脊椎動物學	2
BIOL3630	Animal Physiology	動物生理學	3
BIOL3710	Marine Biology	海洋生物學	3
BIOL4010	Evolutionary Biology	演化生物學	3
BIOL4120	Developmental Biology	發育生物學	3
BIOL4230	Global Change Biology	全球變化生物學	3
BIOL4260	Conservation Biology	保育生物學	3
BIOL4310	Human Genetics	人類遺傳學	3
BIOL4420	Marine Microbial Ecology	海洋微生物生態學	2
BIOL4510	Hong Kong Flora and Vegetation	香港植物及植被	3
BIOL4520	Plant Metabolism and Metabolic Engineering	植物次生代謝及代謝工程	2
BIOL4901	Senior Experimental Project I	實驗專題討論 I	2
BIOL4902	Senior Experimental Project II	實驗專題討論 II	2
BIOL4903	Senior Experimental Project III	實驗專題討論 III	2
CHEM1070	Principles of Modern Chemistry	現代化學概論	3
CHEM1300	Fundamentals in Physical Chemistry	化學物理基礎	2
CHEM2110	Fundamentals of Spectroscopic Analysis	基礎波譜分析	2
CHEM2120	Main Group Chemistry	主族元素化學	2
CHEM2200	Organic Functional Groups: Structure and Reactivity	有機官能團的結構和反應	3

CHEM2300	Thermodynamics and Chemical Equilibrium	熱力學與化學平衡	3
CHEM2400	Analytical Chemistry	分析化學	2
CHEM2868	Basic Integrated Chemistry Laboratory I	基礎綜合化學實驗（一）	2
CHEM2878	Basic Integrated Chemistry Laboratory II	基礎綜合化學實驗（二）	2
CHEM3130	Transition Metal Chemistry	過渡金屬化學	3
CHEM3220	Organic Reactions: Reactivity and Selectivity	有機反應和選擇性	2
CHEM3230	Conjugated Molecules and Synthetic Polymers	共軛分子與合成高分子	2
CHEM3320	Chemical Kinetics	化學動力學	3
CHEM3340	Materials Chemistry	材料科學	2
CHEM3410	Instrumental Analysis	儀器分析	3
CHEM3420	Accreditation of Laboratory Tests	實驗室測試的認證	2
CHEM3810	Organic Chemistry Laboratory	有機化學實驗	2
CHEM3830	Physical Chemistry Laboratory I	物理化學實驗（一）	2
CHEM3860	Transition Metal Chemistry Laboratory	過渡金屬化學實驗	2
CHEM3870	Instrumental Analysis Laboratory	儀器分析實驗	2
CHEM4030	Problem-based Learning in Chemistry I	化學專題研習（一）	0
CHEM4040	Problem-based Learning in Chemistry II	化學專題研習（二）	4
CHEM4100	Advanced Inorganic Chemistry	高等無機化學	2
CHEM4110	Frontier Organometallic Catalysis	有機金屬化學	2
CHEM4200	Bioorganic Chemistry and Chemical Biology	生物有機化學及化學生物學	2
CHEM4302	Statistical Thermodynamics	統計熱力學	2
CHEM4400	Advanced Analytical Chemistry	高級分析化學	2
CHEM4440	Food Testing and Environmental Analysis	食物測試及環境分析	3
CHEM4630	Asymmetric Organic Synthesis	不對稱有機合成	2
CHEM4640	Pharmaceutical Chemistry	藥物化學	2
CHEM4710	Quantum Chemistry	量子化學	2
CHEM4780	Mass Spectrometry	質譜分析法	2
CHEM4784	Bioanalytical Methods	生物分析方法	2
CHEM4785	Industrial Chemistry	工業化學	2
CHEM4788	Chemical Applications in Forensic Science	化學在法庭科學上之應用	2
ENSC4525	Advanced Environmental Chemistry	高級環境化學	3
ENSC4535	Chemical Treatment Processes	化學處理程序	3
LSCI1012	Introduction to Life Forms in the Biosphere	生物圈生命形式概論	3
LSCI2002	Basic Lab Tech in Life Science	生命科學基本實驗技巧	2