

(Study Scheme - English)

**Programme Title**

Bioinformatics

**Study Scheme**

**Applicable to students admitted in 2017-18 and 2018-19**

**Major Programme Requirement**

Students are required to complete a minimum of 72 units of courses as follows: Units

1.	School Package: BIO2001, CHM1001, CSC1001, 1002, MAT1001 or 1003, 1002 or 1004, MAT2040, PHY1001, STA2001	25
2.	Required Courses: BIM3001, 3002, 3009, CSC4008, 4020, GNB2001, 2002, 2003, 2005, MAT3300	29
3.	Elective Courses: 6 to 7 courses selected from the following: BIM2004, 3004, 3005, 3006, 3007, 3010, 3011, 3012, 3013, 3014, 4001, 4003, 4005, BIO2032, CSC3002, GNB3003, STA2002, 3006	18
<b>Total:</b>		<u>72</u>

Note:

- [1] All major required and major elective courses at 2000 level and above will be included in the calculation of Major GPA for honours classification.

(Study Scheme - Chinese)

課程名稱  
生物信息學

修讀辦法

二〇一七至一八及二〇一八至一九年度入學學生適用

主修課程要求

學生須至少修畢以下科目共 72 學分：

	學分
1. 學院課程： BIO2001, CHM1001, CSC1001, 1002, MAT1001 or 1003, 1002 or 1004, MAT2040, PHY1001, STA2001	25
2. 必修科目： BIM3001, 3002, 3009, CSC4008, 4020, GNB2001, 2002, 2003, 2005, MAT3300	29
3. 選修科目： 從以下選修六至七科： BIM2004, 3004, 3005, 3006, 3007, 3010, 3011, 3012, 3013, 3014, 4001, 4003, 4005, BIO2032, CSC3002, GNB3003, STA2002, 3006	18
共：	<hr/> 72

注：

- [1] 所有2000 及以上程度的主修必修和主修選修科目將會計入主修科目之平均績點，並用以厘定學位等級。

## (Recommended Course Pattern - English)

Recommended Course Pattern

- Sufficient units should be allowed in each term for students to fulfill the University Core Requirements, which include: (i) 3 units of Chinese; (ii) 12 units of English; (iii) 1 unit of IT; (iv) 18 units of General Education; and (v) 2 units of Physical Education and Health.
- Programmes with different streams/concentrations are required to provide the recommended pattern for each stream/concentration.

<b>Major Programme Requirement of <u>Bioinformatics</u></b>		
	<b>Recommended Course Pattern</b>	<b>Units</b>
<b>First Year of Attendance</b>	1 <sup>st</sup> term School Package: BIO2001, CHM1001, MAT1001 (or MAT1003)	9
	2 <sup>nd</sup> term School Package: CSC1001, 1002, MAT1002(or MAT1004), STA2001	10
<b>Second Year of Attendance</b>	1 <sup>st</sup> term School Package: MAT2040 Major Required: GNB2001, 2002	3 6
	2 <sup>nd</sup> term School Package: PHY1001 Major Required: GNB2003, 2005 Major Elective: one course from Major Elective(s)	3 5 3
<b>Third Year of Attendance</b>	1 <sup>st</sup> term Major Required: CSC4020, BIM3001 Major Elective(s): one course from Major Elective(s)	6 3
	2 <sup>nd</sup> term Major Required: CSC4008, BIM3002, BIM3009 Major Elective(s): one course from Majors Elective(s)	9 3
<b>Fourth Year of Attendance</b>	1 <sup>st</sup> term Major Required: MAT3300 Major Elective(s): one course from Majors Elective(s)	3 3
	2 <sup>nd</sup> term Major Elective(s): two courses from Majors Elective(s)	6
<b>Total (Major Requirement including School Package):</b>		<b>72</b>

**修課推介**

1. 每學期均須預留足夠學分讓同學符合大學核心課程要求，包括: (一) 中文三學分；(二) 英文十二學分；(三) 資訊科技一學分；(四) 通識教育十八學分及 (五) 體育與健康兩學分。
2. 有不同專修範圍的課程須為每項專修範圍提供修課推介。

<b>生物信息學主修課程要求</b>		
	<b>修課推介</b>	<b>學分</b>
<b>第一修業學年</b>	第一學期 學院課程: BIO2001, CHM1001, MAT1001 (or MAT1003)	9
	第二學期 學院課程: CSC1001, 1002, MAT1002(or MAT1004), STA2001	10
<b>第二修業學年</b>	第一學期 學院課程: MAT2040 主修必修科目: GNB2001, 2002	3 6
	第二學期 學院課程: PHY1001 主修必修科目: GNB2003, 2005 主修選修科目: 從主修選修科目選修一科	3 5 3
	第一學期 主修必修科目: CSC4020, BIM3001 主修選修科目: 從主修選修科目選修一科	6 3
<b>第三修業學年</b>	第二學期 主修必修科目: CSC4008, BIM3002, BIM3009 主修選修科目: 從主修選修科目選修一科	9 3
	第一學期 主修必修科目: MAT3300 主修選修科目: 從主修選修科目選修一科	3 3
<b>第四修業學年</b>	第二學期 主修選修科目: 從主修選修科目選修一科	6
	<b>合共 (主修要求包括學院課程):</b>	

## Course List

### I. School Package for the School of Science and Engineering

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
BIO2001	General Biology	普通生物	3
CHM1001	General Chemistry	普通化學	3
CSC1001	Introduction to Computer Science: Programming Methodology	計算機科學導論：程序設計方法	3
CSC1002	Computational Laboratory	計算機實驗	1
MAT1001	Calculus I	微積分（一）	3
MAT1002	Calculus II	微積分（二）	3
MAT1003	Mathematical Analysis I	數學分析（一）	3
MAT1004	Mathematical Analysis II	數學分析（二）	3
MAT2040	Linear Algebra	線性代數	3
PHY1001	Mechanics	力學	3
STA2001	Probability and Statistics I	概率及統計（一）	3

\*Students may choose either MAT1001 or MAT1003; and MAT1002 or MAT1004.

### II. Major Required Courses

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
BIM3001	Bioinformatics	生物信息學	3
BIM3002	Genetic Engineering	基因工程學	3
BIM3009	Design and Analysis of Bioinformatics Algorithms	生物算法設計及分析	3
CSC4008	Techniques for Data Mining	數據挖掘技術	3
CSC4020	Fundamentals of Machine Learning	機器學習之基礎課程	3
GNB2001	Molecular Biology and Biochemistry	分子生物學和生物化學	3
GNB2002	Cell Biology	細胞生物學	3
GNB2003	Genetics	遺傳學	3
GNB2005	Computational Biology	計算生物學	2
MAT3300	Mathematical Modelling	數學建模	3

### III. Major Elective Courses

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
BIM2004	Genetics Laboratory	遺傳學實驗	2
BIM3004	Animal Physiology	動物生理學	3
BIM3005	Biochemistry and Cell Biology Laboratory	生物化學和細胞生物學實驗	2
BIM3006	Macromolecules and Molecular Pharmacology	大分子功能調節和分子藥理學	3
BIM3007	Computational Genomics & Proteomics	計算基因組學和蛋白質組學	3
BIM3010	Molecular Simulations & Modeling I	分子模擬與建模 I	3
BIM3011	Molecular Simulations & Modeling II	分子模擬與建模 II	3

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BIM3012	Molecular Biophysics	分子生物物理	3
BIM3013	Organic Chemistry	有機化學	3
BIM3014	Statistical Biological Database and Data Visualization	統計生物數據庫和數據可視化	3
BIM4001	Frontier Life Science Topics and Reviews	生物科學前沿講座與文獻綜述	3
BIM4003	Student Research and Innovation	學生科技創新項目	3
BIM4005	Research Internship	研究實習	3
BIO2032	Biology Laboratory	生物學實驗	1
CSC3002	Introduction to Computer Science: Programming Paradigms	計算機科學導論：程序設計範式	3
GNB3003	Protein Structure Analysis and Proteomics	蛋白質結構分析和蛋白質組學	3
STA2002	Probability and Statistics II	概率及統計（二）	3
STA3006	Design and Analysis of Experiments	實驗設計與分析	3