

(Study Scheme - English)

Programme Title

Chemistry

Study Scheme

Applicable to students admitted in 2021-22

Major Programme Requirement

Studies in Chemistry are divided into TWO main streams and students are required to specialize in one of the streams:

- (1) Chemical Science; and
- (2) Materials Science and Engineering

Chemical Science Stream

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

	Units
1. School Package: BIO1001, CHM1001, CSC1001, 1002, MAT1001, 1002, 2040, PHY1001, STA2001	25
2. Required Courses: BIO2004, CHM2002, 2110, 2128, 2210, 2310, 2320, 2328, 3418, 3520, 3530	30
3. Elective Courses:	17
(a) One course from: CHM4510, 4530	
(b) Two courses from the following list: CHM3110, 3130, 3210, 3310, 3320, 3420, 3540, MSE2012, 2021, 3002, 3007, 3011/6002, 3013	
(c) Three courses from the following list: CHM4210, 4328, 4330, 4340, 4410, 4422, 4630, 4710, MSE4005, PHM2006, PHY3410, 4001, 4221	

Total: 72

Materials Science and Engineering Stream

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

	Units
1. School Package: BIO1001, CHM1001, CSC1001, 1002, MAT1001, 1002, 2040, PHY1001, STA2001	25
2. Required Courses: CHM2002, 2110, 2128, 2210, 2310, 2328, 3418, 3520, 3530, MSE2012, 2021	30
3. Elective Courses:	17
(a) One course from: BIO2004, CHM2320, MSE4560, PHY4001	
(b) One course from: MSE4580, 4590	
(c) Two courses from the following list: CHM3540, 4328, ENE3006, MSE3002, 3007, 3510, 3518, 4005	
(d) Two courses from the following list: CHM3130, 4422, MSE3011/6002, 3013, 4450, 4530, 4540, 4550, 4570, PHY3410, 4221	
Total:	72

Notes:

- [a] All Major Required and Major Elective courses at 2000 level and above will be included in the calculation of Major GPA for honours classification.
- [b] Some courses not on this list may be used to satisfy the course requirement in this Programme. These courses include: CHM6348 (can be equated to CHM4328), CHM6342 and MSE6202 (both can be equated to CHM4340).

(Study Scheme - Chinese)

課程名稱

化學

修讀辦法

二〇二一至二二年度入學學生適用

主修課程要求

本課程分設兩項專修範圍，學生須選修其中一項專修範圍：

- (1) 化學科學；及
- (2) 材料科學與工程。

化學科學專修範圍

學生須至少修畢以下科目共 72 學分：

學分

1. 學院課程：

BIO1001, CHM1001, CSC1001, 1002, MAT1001, 1002, 2040, PHY1001, STA2001 25

2. 必修科目：

BIO2004, CHM2002, 2110, 2128, 2210, 2310, 2320, 2328, 3418, 3520, 3530 30

3. 選修科目：

17

(a) 從以下科目選修一門科目：

CHM4510, 4530

(b) 從以下科目選修兩門科目：

CHM3110, 3130, 3210, 3310, 3320, 3420, 3540, MSE2012, 2021, 3002, 3007, 3011/6002, 3013

(c) 從以下科目選修三門科目：

CHM4210, 4328, 4330, 4340, 4410, 4422, 4630, 4710, MSE4005, PHM2006, PHY3410, 4001, 4221

共： 72

材料科學與工程專修範圍

學生須至少修畢以下科目共 72 學分：

	學分
1. 學院課程： BIO1001, CHM1001, CSC1001, 1002, MAT1001, 1002, 2040, PHY1001, STA2001	25
2. 必修科目： CHM2002, 2110, 2128, 2210, 2310, 2328, 3418, 3520, 3530, MSE2012, 2021	30
3. 選修科目：	17
(a) 從以下科目選修一門科目： BIO2004, CHM2320, MSE4560, PHY4001	
(b) 從以下科目選修一門科目： MSE4580, 4590	
(c) 從以下科目選修兩門科目： CHM3540, 4328, ENE3006, MSE3002, 3007, 3510, 3518, 4005	
(d) 從以下科目選修兩門科目： CHM3130, 4422, MSE3011/6002, 3013, 4450, 4530, 4540, 4550, 4570, PHY3410, 4221	
共：	<hr/> 72

註：

- [a] 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，並用以釐定學位等級。
- [b] 某些不在此列表中的科目可用於滿足該課程專業科目的要求。這些科目包括：CHM6348(可等同 CHM4328)，CHM6342 与 MSE6202 (均可等同 CHM4340)。

(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.

Major Programme Requirement of <u>Chemical Science Stream</u>		
	Recommended Course Pattern	Units
First Year of Attendance	1 st term School Package: CHM1001, MAT1001, PHY1001	9
	2 nd term School Package: BIO1001, CSC1001, 1002, MAT1002	10
Second Year of Attendance	1 st term School Package: MAT2040 Major Required: CHM2210, 2128	3 5
	2 nd term School Package: STA2001 Major Required: CHM2110, 2310, 2328	3 8
Third Year of Attendance	1 st term Major Required: CHM2320, 3520 Major Elective(s): One course selected from CHM3130 or 3310 or MSE2012 or 3011 or 3013	6 3
	2 nd term Major Required: BIO2004, CHM2002, 3418 Major Elective(s): One course selected from CHM3110 or 3210 or 3320 or 3420 or 3540 or 4328 or MSE2021 or 3002 or PHM2006 or PHY3410 or 4001 or 4221	8 3
Fourth Year of Attendance	1 st term Major Required: CHM3530 Major Elective(s): Two courses selected from CHM4330, 4410, 4422, 4630, MSE3007, 4005	3 6
	2 nd term Major Elective(s): One course selected from CHM4210 or 4340 or 4710 One course selected from CHM4510 or 4530	3 2
Total (Major Requirement including School Package):		72

Major Programme Requirement of <u>Materials Science and Engineering Stream</u>		
	Recommended Course Pattern	Units
First Year of Attendance	1 st term School Package: CHM1001, MAT1001, PHY1001	9
	2 nd term School Package: BIO1001, CSC1001, 1002, MAT1002	10
Second Year of Attendance	1 st term School Package: MAT2040 Major Required: CHM2128, 2210	3 5
	2 nd term School Package: STA2001 Major Required: CHM2110, 2310, 2328	3 8
Third Year of Attendance	1 st term Major Required: CHM3520, MSE2012 Major Elective(s): One course selected from CHM2320 or 3130 or MSE3011 or 3013 or 3510 or 3518	6 3
	2 nd term Major Required: CHM2002, 3418, MSE2021 Major Elective(s): One course selected from BIO2004 or CHM3540 or 4328 or ENE3006 or MSE3002 or 3007	8 3
Fourth Year of Attendance	1 st term Major Required: CHM3530 Major Elective(s): Two courses selected from CHM4422, MSE4005, 4450, 4530, 4540, 4550, 4570, PHY3410, 4221	3 6
	2 nd term Major Elective(s): One course selected from MSE4560 or PHY4001 One course selected from MSE4580 or 4590	3 2
Total (Major Requirement including School Package):		72

(Recommended Course Pattern – Chinese)

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) 信息科技一學分；(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。

<u>化學科學主修課程要求</u>		
	修課推介	學分
第一修業學年	第一學期 學院課程: CHM1001, MAT1001, PHY1001	9
	第二學期 學院課程: BIO1001, CSC1001, 1002, MAT1002	10
第二修業學年	第一學期 學院課程: MAT2040 主修必修科目: CHM2128, 2210	3 5
	第二學期 學院課程: STA2001 主修必修科目: CHM2110, 2310, 2328	3 8
第三修業學年	第一學期 主修必修科目: CHM2320, 3520 主修選修科目: CHM3130 或 3310 或 MSE2012 或 3011 或 3013	6 3
	第二學期 主修必修科目: BIO2004, CHM2002, 3418 主修選修科目: CHM3110 或 3210 或 3320 或 3420 或 3540 或 4328 或 MSE2021 或 3002 或 PHM2006 或 PHY3410 或 4001 或 4221	8 3
第四修業學年	第一學期 主修必修科目: CHM3530 主修選修科目: 從以下選修兩科 CHM4330 或 4410 或 4422 或 4630 或 MSE3007 或 4005	3 6
	第二學期 主修選修科目: 從以下選修一科 CHM4210 或 4340 或 4710 從以下選修一科 CHM4510 或 4530	3 2
合共 (主修要求包括學院課程):		72

材料科學與工程主修課程要求		
	修課推介	學分
第一修業學年	第一學期 學院課程: CHM1001, MAT1001, PHY1001	9
	第二學期 學院課程: BIO1001, CSC1001, 1002, MAT1002	10
第二修業學年	第一學期 學院課程: MAT2040 主修必修科目: CHM2128, 2210	3 5
	第二學期 學院課程: STA2001 主修必修科目: CHM2110, 2310, 2328	3 8
第三修業學年	第一學期 主修必修科目: CHM3520, MSE2012 主修選修科目: CHM2320 或 3130 或 MSE3011 或 3013 或 3510 或 3518	6 3
	第二學期 主修必修科目: CHM2002, 3418, MSE2021 主修選修科目: BIO2004 或 CHM3540 或 4328 或 ENE3006 或 MSE3002 或 3007	8 3
第四修業學年	第一學期 主修必修科目: CHM3530 主修選修科目: 從以下選修兩科 CHM4422, MSE4005, 4450, 4530, 4540, 4550, 4570, PHY3410, 4221	3 6
	第二學期 主修選修科目: 從以下選修一科 MSE4560, PHY4001 從以下選修一科 MSE4580, 4590	3 2
	合共 (主修要求包括學院課程):	72

Course List

I. School Package for the School of Science and Engineering

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
BIO1001	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：程式設計方法	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
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

II. Major Required courses

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
BIO2004 ^[1]	Biochemistry	生物化學	3
CHM2002	Physical Chemistry	物理化學	3
CHM2110	Analytical Chemistry	分析化學	3
CHM2128	Comprehensive Chemistry Laboratory (Inorganic, Analytic)	綜合化學實驗 (無機及分析化學)	2
CHM2210	Inorganic Chemistry	無機化學	3
CHM2310	Organic Chemistry I (equal to CHM2001)	有機化學（一） (相當於 CHM2001)	3
CHM2320 ^[1]	Organic Chemistry II	有機化學（二）	3
CHM2328	Organic Chemistry Laboratory	有機化學實驗	2
CHM3418	Physical Chemistry Laboratory	物理化學實驗	2
CHM3520	Introduction to Materials Science and Engineering	材料科學與工程導論	3
CHM3530	Polymer Chemistry	高分子化學	3
MSE2012 ^[2]	Materials Chemistry	材料化學	3
MSE2021 ^[2]	Materials Physics	材料物理	3

Explanatory Notes:

[1] Applicable to Chemical Science Stream only.

[2] Applicable to Materials Science and Engineering Stream only.

III. Major Elective courses

Chemical Science Stream

Course Code	Course Title (English)	Course Title (Chinese)	Unit (s)
CHM3110	Advanced Analytic Chemistry and Experiments	高等分析化學及實驗	3

CHM3130	Fundamentals of Spectroscopy, Microscopy and Chromatography	光譜學、顯微學、色譜學基礎	3
CHM3210	Advanced Inorganic Chemistry	高等無機化學	3
CHM3310	Advanced Structure Elucidation in Organic Molecules	高等有機結構分析	3
CHM3320	Advanced Organic Chemistry: Reactivity, Structures, Mechanisms and Experiments	高等有機化學 (反應, 結構, 機理及實驗)	3
CHM3420	Advanced Physical Chemistry (Structural Chemistry)	高等物理化學 (結構化學)	3
CHM3540	Introduction to Functional Materials	功能材料導論	3
CHM4210	Transition Metals and Coordination Chemistry	過渡金屬與配位化學	3
CHM4328	Advanced Organic Synthesis Laboratory	高等有機合成實驗	3
CHM4330	Organometallic Chemistry and Catalysis	金屬有機化學及催化	3
CHM4340	Modern Organic Synthesis	現代有機合成	3
CHM4410	Solid State Chemistry	固體化學	3
CHM4422	Chemical Kinetics and Catalysis	化學動力學與催化	3
CHM4510	Undergraduate Special Project (alternative)	專門研究課題	2
CHM4530	Undergraduate Thesis (alternative)	畢業論文設計	2
CHM4630	Medicinal Chemistry	藥物化學	3
CHM4710	Chemical Biology	化學生物學	3
MSE2012	Materials Chemistry	材料化學	3
MSE2021	Materials Physics	材料物理	3
MSE3002	Microstructural Evolution in Materials	材料微觀結構的演變	3
MSE3007	Electrical, Optical, and Magnetic Properties of Materials	材料的電學、光學及磁學性質	3
MSE3011 (MSE6002)	Engineering Economics and Management	工程經濟與管理	3
MSE3013	Principles of Chemical Engineering	化工原理	3
MSE4005	Nanoscale Materials	納米材料	3
PHM2006	Medicinal Chemistry and Laboratory	藥物化學與實驗	3
PHY3410	Quantum Mechanics and its Applications I	量子力學 (一)	3
PHY4001	Solid-State Physics	固體物理	3
PHY4221	Quantum Mechanics	量子力學	3

Materials Science and Engineering Stream

Course Code	Course Title (English)	Course Title (Chinese)	Unit (s)
BIO2004	Biochemistry	生物化學	3
CHM2320	Organic Chemistry II	有機化學 (二)	3
CHM3130	Fundamentals of Spectroscopy, Microscopy and Chromatography	光譜學、顯微學、色譜學基礎	3
CHM3540	Introduction to Functional Materials	功能材料導論	3
CHM4328	Advanced Organic Synthesis	高等有機合成實驗	3

	Laboratory		
CHM4422	Chemical Kinetics and Catalysis	化學動力學與催化	3
ENE3006	Materials for Energy Application	能源應用材料	3
MSE3002	Microstructural Evolution in Materials	材料微觀結構的演變	3
MSE3007	Electrical, Optical, and Magnetic Properties of Materials	材料的電學、光學及磁學性質	3
MSE3011/MSE6002	Engineering Economics and Management	工程經濟與管理	3
MSE3013	Principles of Chemical Engineering	化工原理	3
MSE3510	Introduction to Structural Materials	結構材料導論	3
MSE3518	Materials Analysis and Experiments	材料分析與實驗	3
MSE4005	Nanoscale Materials	納米材料	3
MSE4450	Surface Science and Interfacial Engineering	表面科學與界面工程	3
MSE4530	Polymer Reaction Engineering and Processing	聚合物反應工程與加工	3
MSE4540	Introduction to Polymer Science and Materials	高分子科學與材料導論	3
MSE4550	Product Engineering and Process Modelling	產品工程與過程建模	3
MSE4560	Separation Engineering and Unit Operations	分離工程與單元操作	3
MSE4570	Semi-conductors and Devices	半導體與器件	3
MSE4580	Undergraduate Thesis	畢業論文設計	2
MSE4590	Industrial Capstone	工業設計	2
PHY3410	Quantum Mechanics and its Applications I	量子力學（一）	3
PHY4001	Solid-State Physics	固體物理	3
PHY4221	Quantum Mechanics	量子力學	3

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