

**(Study Scheme – English)**

<b>Programme Title</b> Materials Science and Engineering	
<b>Study Scheme</b>  <p style="text-align: center;"><b>Applicable to students admitted in 2024-25 and thereafter</b></p> <b>Major Programme Requirement</b>  Students are required to complete a minimum of 72 units of courses as follows:	
	Units
1. School Package: CHM1001, CSC1005, 1006, MAT1001, 1002, 2040, PHY1001, STA2001	22
2. Required Courses: CHM2002, 2210, 2310, 2228, 3130, MSE2012, 2021, 2023, 3007, 3011, 3013, 3022, 3023, 4020	38
3. Elective Courses:	12
(a) 3 units of course selected from the following: CHM4422, MSE3407, 3408, 4550, 4560	
(b) 6 units of courses selected from the following: BIO1001, 2004, CHM2110, 4630, 4710, MAT3253, MSE3002, 3406, 4450, PHY2001, 3002, 3006, 3007, 3410, 4001, 4002, 4003, 4221	
(c) 3 units of courses selected from the following: ENE3006, MSE3009, 3404, 3405, 3510, 4005	
<b>Total:</b>	<b>72</b>
Notes:	
[a] Students can choose to take either MAT2040 or MAT2042 to fulfill the graduation requirement.	
[b] Students can choose to take either STA2001 or STA2001H to fulfill the graduation requirement.	
[c] Students can choose to take either CSC1001 and CSC1002 or CSC1003 and CSC1004 or CSC1005 and CSC1006 to fulfill the graduation requirement.	
[d] CHM1001/CHM1011 and all Major Required and Major Elective courses at 2000 level and above will be included in the calculation of Major GPA for honours classification.	

[e] Students can choose to take either CHM1001 or CHM1011 to fulfill the graduation requirement.

[f] Students can choose to take either PHY1001 or PHY1011 to fulfill the graduation requirement.

(Study Scheme – Chinese)

課程名稱 材料科學與工程	
修讀辦法  二零二四至二五年度及以後入學學生適用	
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 CHM1001, CSC1005, 1006, MAT1001, 1002, 2040, PHY1001, STA2001	22
2. 必修科目 CHM2002, 2210, 2310, 2228, 3130, MSE2012, 2021, 2023, 3007, 3011, 3013, 3022, 3023, 4020	38
3. 選修科目	12
(a) 從以下選修 3 學分： CHM4422, MSE3407, 3408, 4550, 4560	
(b) 從以下選修 6 學分： BIO1001, 2004, CHM2110, 4630, 4710, MAT3253, MSE3002, 3406, 4450, PHY2001, 3002, 3006, 3007, 3410, 4001, 4002, 4003, 4221	
(c) 從以下選修 3 學分： ENE3006, MSE3009, 3404, 3405, 3510, 4005	
總計：	72
註：	
[a] 學生可以修讀 MAT2040 或 MAT2042 以滿足畢業要求。	
[b] 學生可以修讀 STA2001 或 STA2001H 以滿足畢業要求。	
[c] 學生可以修讀 CSC1001, CSC1002 或 CSC1003, CSC1004 或 CSC1005, CSC1006 以滿足畢業要求。	
[d] CHM1001/CHM1011 以及所有 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。	
[e] 學生可以修讀 CHM1001 或 CHM1011 以滿足畢業要求。	
[f] 學生可以修讀 PHY1001 或 PHY1011 以滿足畢業要求。	

## (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>Materials Science and Engineering</u></b>		
	<b>Recommended Course Pattern</b>	<b>Units</b>
<b>First Year of Attendance</b>	1 <sup>st</sup> term School Package: CHM1001(or CHM1011), CSC1005 (or CSC1001 or CSC1003), MAT1001	9
	2 <sup>nd</sup> term School Package: CSC1006 (or CSC1002 or CSC1004), MAT1002, MAT2040(or MAT2042), PHY1001(or PHY1011)	10
<b>Second Year of Attendance</b>	1 <sup>st</sup> term School Package: STA2001(or STA2001H) Major Required: CHM2210, 2228, 2310	3 8
	2 <sup>nd</sup> term Major Required: MSE2012, 2021, 2023	7
<b>Third Year of Attendance</b>	1 <sup>st</sup> term Major Required: CHM2002, MSE3013, 3022 Major Elective(s): one course from CHM4422, MSE3407, 3408, 4550, 4560	9 3
	2 <sup>nd</sup> term Major Required: CHM3130, MSE3011, 3023 Major Elective(s): two courses from BIO1001, 2004, CHM2110, 4630, 4710, MAT3253, MSE3002, 3406, 4450, PHY2001, 3002, 3006, 3007, 3410, 4001, 4221	8 6
<b>Fourth Year of Attendance</b>	1 <sup>st</sup> term Major Required: MSE3007 Major Elective(s): one course from ENE3006, MSE3009, 3404, 3405, 3510, 4005	3 3
	2 <sup>nd</sup> term Major Required: MSE4020	3
<b>Total (Major Requirement including School Package):</b>		<b>72</b>

## (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。

材料科學與工程方向主修課程要求		
	修課推介	學分
第一修業學年	第一學期 學院課程：CHM1001(or CHM1011), CSC1005 (or CSC1001 or CSC1003), MAT1001	9
	第二學期 學院課程：CSC1006 (CSC1002 or CSC1004), MAT1002, MAT2040(or MAT2042), PHY1001(or PHY1011),	10
第二修業學年	第一學期 學院課程：STA2001(or STA2001H) 主修必修科目：CHM2210, 2228, 2310	3 8
	第二學期 主修必修科目：MSE2012, 2021, 2023	7
第三修業學年	第一學期 主修必修科目：CHM2002, MSE3013, 3022 主修選修科目：從 CHM4422, MSE3407, 3408, 4550, 4560 選修一科	9 3
	第二學期 主修必修科目：CHM3130, MSE3011, 3023 主修選修科目：從 BIO1001, 2004, CHM2110, 4630, 4710, MAT3253, MSE3002, 3406, 4450, PHY2001, 3002, 3006, 3007, 3410, 4001, 4221 選修兩科	8 6
第四修業學年	第一學期 主修必修科目：MSE3007 主修選修科目：從 ENE3006, MSE3009, 3404, 3405, 3510, 4005 選修一科	3 3
	第二學期 主修選修科目：MSE4020	3
合共（主修要求包括學院課程）：		72

## Course List

### I. School Package

Course Code		Course Title (English)	Course Title (Chinese)	Unit(s)
Option H <sup>#</sup>	CHM1001	General Chemistry	普通化學	3
Option I <sup>#</sup>	CHM1011	Honours General Chemistry	普通化學榮譽課程	3
Option C <sup>#</sup>	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
Option D <sup>#</sup>	CSC1003	Introduction to Computer Science and Java Programming	計算機科學與 Java 程序設計導論	3
	CSC1004	Computational Laboratory Using Java	Java 程序設計實驗	1
Option E <sup>#</sup>	CSC1005	Introduction to Computer Engineering: Programming and Applications	計算機工程導論:程序設計与应用	3
	CSC1006	Artificial Intelligence for Science and Engineering	人工智能在科學與工程中的應用	1
MAT1001		Calculus I	微積分(一)	3
MAT1002		Calculus II	微積分(二)	3
Option A <sup>#</sup>	MAT2040	Linear Algebra	線性代數	3
Option B <sup>#</sup>	MAT2042	Honours Linear Algebra	線性代數榮譽課程	3
Option J <sup>#</sup>	PHY1001	Mechanics	力學	3
Option K <sup>#</sup>	PHY1011	Honours Mechanics	力學榮譽課程	3
Option F <sup>#</sup>	STA2001	Probability and Statistics I	概率與統計(一)	3
Option G <sup>#</sup>	STA2001H	Honours Probability and Statistics I	概率及統計榮譽課程(一)	3

<sup>#</sup> Remark:

- Students can choose to take either Option A or Option B to fulfill the graduation requirement.
- Students can choose to take either Option C or Option D or Option E to fulfill the graduation requirement.
- Students can choose to take either Option F or Option G to fulfill the graduation requirement.
- Students can choose to take either Option H or Option I to fulfill the graduation requirement.
- Students can choose to take either Option J or Option K to fulfill the graduation requirement.

### II. Required courses

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
CHM2002	Physical Chemistry	物理化學	3
CHM2210	Inorganic Chemistry	無機化學	3
CHM2228	Inorganic Chemistry Laboratory	無機化學實驗	2
CHM2310	Organic Chemistry I	有機化學(一)	3
CHM3130	Fundamentals of Spectroscopy, Microscopy and Chromatography	光譜學、顯微學、色譜學基礎	3
MSE2012	Materials Chemistry	材料化學	3
MSE2021	Materials Physics	材料物理	3
MSE2023	Materials General Laboratory	材料實驗	1
MSE3007	Electronic, 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
MSE3023	Materials General Laboratory II	材料實驗 II	2
MSE3022	Polymer Chemistry and Reaction Engineering	高分子化學與反應工程	3
MSE4020	Thesis	畢業設計	3

### III. Elective Courses

Course Code	Course Title (English)	Course Title (Chinese)	Unit(s)
BIO1001	General Biology	普通生物學	3
BIO2004	Biochemistry	生物化學	3
CHM2110	Analytical Chemistry	分析化學	3
CHM4422	Chemical Kinetics and Catalysis	化學動力學與催化	3
CHM4630	Medicinal Chemistry	藥物化學	3
CHM4710	Chemical Biology	化學生物學	3
ENE3006	Materials for Energy Applications	能源應用材料	3
MAT3253	Complex Variables	復變函數	3
MSE3002	Microstructural Evolution in Materials	材料微觀結構的演變	3
MSE3009	Introduction to Ceramics	陶瓷導論	3
MSE3404 (MSE6110)	Environmental Materials	環境材料	3
MSE3405 (MSE6104)	Computational Materials	計算材料	3
MSE3406	Electronic and Photonic Materials and Devices Laboratory	電子與光子材料和器件實驗	3
MSE3407	Materials Selection in Design and Manufacturing	設計與製造中的材料選擇	3
MSE3408	Polymer Physics and Processing	高分子物理與加工	3
MSE3510	Introduction to Structural Materials	結構材料導論	3
MSE4005	Nanoscale Materials	納米材料	3
MSE4450	Surface Science and Interfacial Engineering	表面科學與介面工程	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
PHY2001	Electricity and Magnetism	電磁學	3
PHY3002	Electrodynamics I	電動力學（一）	3
PHY3006	Physics of Semiconductors Devices	半導體器件物理	3
PHY3007	Optoelectronics	光電子學	3
PHY3410	Quantum Mechanics and its Applications I	量子力學（一）	3
PHY4001	Solid-State Physics	固體物理	3
PHY4002	Electrodynamics II	電動力學（二）	3
PHY4003	Introduction to Photonic Crystals	光子晶體簡介	3

PHY4221	Quantum Mechanics	量子力學	3
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