

Ming Chuan University Department of Biotechnology - Biotechnology Industry Special Cohort Course Outline for all students entering in 2023-24

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Course	Credits	Hours	1 st year				2 nd year				3 rd year				4 th year				Note			
			Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring					
			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab				
Core Required Courses	中國文學鑑賞與創作 (一)00123 Chinese Literature: Appreciation and Creative Writing 1	2	2	2																		
	中國文學鑑賞與創作 (二)00124 Chinese Literature: Appreciation and Creative Writing 2	2	2		2																	
	應用英文(一) 01108 Practical English 1	0	2	1	1																Note 1	
	應用英文(二) 01109 Practical English 2	0	2			1	1															Note 1
	應用英文(三) 01208 Practical English 3	0	2					1	1													Note 1
	應用英文(四) 01209 Practical English 4	0	2						1	1												Note 1
	商務溝通英文(一) 01306 English for Business Communication 1	2	3									2	1									Note 1
	商務溝通英文(二) 01307 English for Business Communication 2	2	3											2	1							Note 1
	職場應用英文(一) 01406 Practical English of Professionals 1	2	3													2	1					Note 1
	職場應用英文(二) 01407 Practical English of Professionals 2	2	3															2	1			Note 1

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有機化學實驗 39202 Organic Chemistry Lab.	1	3			1	2													
生技法規與學術倫理 39120 Laws, Standards, and Academic Ethics on Biotechnology	2	2			2														
新生專題討論 39118 Freshman Seminar	1	1	1																
分析化學(含實驗) 39216 Analytical Chemistry(Lab)	3	3					3												
生物化學(一)39212 Biochemistry-1	4	4					4												
生物化學實驗(一) 39206 Biochemistry Lab.-1	1	3					1	2											Service Learning
生物化學(二)39213 Biochemistry-2	4	4							4										
微生物學 39207 Microbiology	3	3							3										
微生物學實驗 39208 Microbiology Lab.	1	3							1	2									
生物統計學 39306 Biostatistics	3	3									3								
實驗室品質管理系統 39319 Laboratory Quality Management System	3	3										3							
專題討論(一)39403 Seminar 1	1	1													1	0			
專題討論(二)39404 Seminar 2	1	1															1	0	

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分子遺傳學與應用 39248 Molecular genetics and applications	3	3					3												
生物序列分析實作 39242 Special Topics to Genome Project & Annotation	3	3						3											
藥學概論 39353 Introduction to Pharmacy	3	3					3												
生物無機化學 39331 Bioinorganic Chemistry	3	3									3								
生物儀器分析暨應用 39349 Applied Bioinstrumentation and Analysis	3	3									3								
生物資訊學(一) 39317 Bioinformatics-1	2	3											2	1					Computer courses
生物資訊學(二) 39345 Bioinformatics-2	2	3													2	1			Computer courses
分子生物學特論 39448 Special Topics in Molecular Biology	3	3											3						

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			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
魚菜共生農法的理論 與實作 39362 The Principle and Practice of Aquaponics	3	3										3							
酵素學 39332 Enzymology	3	3											3						
食品衛生與安全 39344 Food Safety	3	3											3						
發酵學 39338 Fermentation	3	3											3						
食材的科學與文化 39348 The Science and Culture Behind Food Material	3	3											3						
食品加工(含實 驗)39450 Food Process (Lab)	3	3													3				
保健營養食品 39437 Dietary Supplements and Functional Foods	3	3													3				
以上專業選修學程至少需修 27 個學分 Professional electives must be selected at least 27 credit hours																			

研究論文寫作 39359 Research Paper Writing	1	1												1					
產業實習 39459 Internship in Industry	1	1													1				
企業實習 BIO19	3														3				
企業進階實習 39460 Advanced Internship	3																3		
職場實務專題 39461 Seminar on Industry Practice	3																3		
生物檢測器 39431 Biosensor	3	3													3				
生物科技專利及智慧財產權 39455 Biotechnical Intellectual Property Rights and Patents	2	2													2				
生物科技產業 39451 Introduction of Bioindustry	2	2													2				
物理化學 39452 Physic Chemistry	3	3													3				
Subtotal Required Course Credits	75																		
Subtotal Elective Course Credits	53																		
Subtotal Professional Elective Course Credits	27																		
Subtotal Elective courses from other schools	26																		
Grand Total	128																		

Notes:

- 依本校學則規定，大學部學生需通過「服務學習」、「英語能力」、「資訊能力」、「中文能力」、「運動能力」及「專業基本能力」檢定，始得畢業。
- In accordance with the General Provisions for Study, undergraduate students need to satisfactorily complete Service Learning, meet the university-wide basic competencies of English, Information Technology, Chinese, and Sports, and pass the core competencies of their department to be eligible for graduation.
- 通識教育課程在畢業前至少必須修完 12 學分，課程分「人文」、「社會」、「自然」三個領域，每個領域再分「核心」、「延伸」二類，每個學生在每一領域的每一類至少必須修一門課 2 學分方得畢業。通識教育課程以 12 學分為限，超修者不得列計於畢業學分內。
- Students who entered in and since the 2008-09 academic year need to complete at least 12 General Education course credits. General Education courses are divided into three areas: Humanities, Social Science, and Natural Science. Each area is divided into two subcategories: core and

extended. Students need to take 1 two-credit course in both of the subcategories within each area to be eligible for graduation. Only 12 course credits will be counted toward graduation. Additional course credits earned in General Education courses are not counted toward graduation.

3. 本系承認外系選修學分數至多為 26 學分。教育學程之學分數不得列計於畢業學分內。
Elective credits of the other departments are, at most, 26 credits. Course credits from the "Teacher Education Program" of the Teacher Education Center cannot be counted toward students' final grades
4. 修習本系開設(英)之課程，經系主任同意後可列入本系專業選修學分，可追溯至 112 學年度以前入學學生適用。
4. Students can choose the course (E) from BT, which can be counted as their graduation credits under the approval of the department chair, can be included in the elective credits of the department, and can be applied retroactively to students who entered the university before the 2023-2024 academic year.
5. 本必選修科目表之選修課程，可追溯至 112 學年度以前入學學生適用。
5. The newly added elective courses in this academic year can be applied retroactively to students who entered the university prior to the 2022-2023 academic year.
6. 修習與需重補修本系專業課程者，經系主任同意後可修其他學系相同科目名稱或本系相同名稱(英)之課程，並可列入畢業學分，可追溯至 112 學年度以前入學學生適用。
6. When taking and retaking professional courses, students can choose the same course name, the same course name (E), or the same course content as substitutions under the approval of the department chair. These courses can be regarded as graduation credits and applied retroactively to students who entered the university before the 2023-2024 academic year.
7. 學生選修本系碩士班課程，經系主任同意後可視為本系專業選修，其學分數得列計於畢業學分內，可追溯至 112 學年度以前入學學生適用。
7. Students can choose the course from BT master program, which can be counted as their graduation credits under the approval of the department chair, and can be applied retroactively to students who entered the university prior to the 2023-2024 academic year.
8. 專業選修的 2 個學程，至少必須選修其中 1 個學程，所選學程至少應修 15 學分。
8. Professional Electives can be selected from two programs of study, students must first complete one of these of study, each consisting of at least 15 course credits.
9. 專業選修至少需修 27 個學分。
9. Professional electives must be selected at least 27 credit hours.
10. 未列於畢業架構的跨領域學分學程之學分，可認列為外系學分。
10. The credits of interdisciplinary focused course program are not included in course structure diagram that can be regarded as the other department credits
11. 新增必修課程，非原架構學生修習可認列為選修學分，並追溯至 112 學年度以前入學學生。

11. The required courses on this Course Outline may be counted as elective course credits toward total graduation credits by students who entered the university prior to the 2023-2024 academic year.
12. 應屆畢業生及延修生若因體育必修課程未通過得以綜合體育一、綜合體育二對抵，至多對抵兩門體育必修課程，該課程對抵可追溯至109學年度以前入學學生適用。
12. Graduating students and students in the extended study period who did not pass required courses of Physical Education can waive a maximum of two (2) required Physical Education courses by passing Comprehensive Physical Education I, Comprehensive Physical Education II. This regulation is applicable for those admitted in and prior to 2020-2021 academic year.
13. 外國生、僑生、港澳生若中文能力不佳，可選修國際學院基礎華語(一)(二)，替代中國文學鑑賞與創作(一)(二)；本課程可追溯至110學年度以前入學學生適用。
13. If International students, overseas students or students from Hong Kong and Macao are not good at Chinese, they can take the courses of Basic Chinese I & II through International College instead of taking Chinese Literature: Appreciation and Creative Writing I & II. This regulation can be applied to students who entered the university prior to the 2021-2022 academic year.

基本能力	檢定標準
1. 具備生命科學領域相關知識能力 Possess professional knowledge and related ability in life sciences field	(1) 修習任一專業(生物醫學、食品生技)學程15學分規定 Complete 15 credits in one of the programs mentioned below: biomedical program, food biotechnology program (2) 修生物科技學系開設專業選修課程達27學分 Complete 27 credits of professional elective courses offered by the Department of Biotechnology
2. 具備團隊合作溝通協調能力 Teamwork and communication skills	以下檢定標準擇一 Choose one of the evaluation criteria mentioned below: (1) 修畢本系開設以分組實習為主的

	<p>必修實驗室課程，其中三科學期成績達 70 分以上者。</p> <p>Students are required to complete required laboratory courses opened by the department for group internship, and the semester grade of 3 of these courses should be over 70.</p> <p>(2) 修習企業進階實習與職場實務專題課程，學期成績達70分以上者。</p> <p>Students' semester grade for Advanced Enterprise Internship and Seminar on Industry Practice should be over 70.</p>
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