

中山醫學大學

Chung Shan Medical University

113 學年度入學新生應修科目及學分表

Courses and Credits for Freshmen Admitted in the 113th Academic Year

醫學科技學院生物醫學科學學系

Department of Biomedical Sciences, College of Medical Science and Technology

第一學年

1stAcademic Year

科目名稱	英文科目名稱 Course	必修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
普通生物學(一)	General Biology(I)	必修 Required	3	3	0	
普通生物學(二)	General Biology(II)	必修 Required	3	0	3	
普通生物學實驗	General Biology Laboratory	必修 Required	1	0	1	
普通化學	General Chemistry	必修 Required	2	2	0	
書報討論(一)	Discussion in Literature(I)	必修 Required	1	1	0	
生物統計學	Biostatistics	必修 Required	2	2	0	
書報討論(二)	Discussion in Literature(II)	必修 Required	1	0	1	
電腦資訊與生醫科學	Computer Information for Biomedical Science	必修 Required	2	0	2	
有機化學	Organic Chemistry	必修 Required	2	0	2	
有機化學實驗	Organic Chemistry Laboratory	必修 Required	1	0	1	
普通物理學	General Physics	選修 Elective	2	2	0	
普通化學實驗	General Chemistry Laboratory	選修 Elective	1	1	0	
生技醫藥產業職務探索	Job Exploration in Biopharmaceutical Industry	選修 Elective	2	2	0	
生醫科學計算	Calculations in Biomedical Sciences	選修 Elective	2	0	2	專業選修 Professional electives
Python 程式設計	Python Programming	選修 Elective	2	0	2	
生物醫學研究導論	Introduction to Research in Biomedical Sciences	選修 Elective	1	0	1	專業選修 Professional electives
實用英語溝通技巧	Practical English Communication Skills	選修 Elective	2	0	2	
生技創新與產業實作微學 分	Biotechnology Innovation and Industrial Practice Micro-Certificate Course	選修 Elective	1	0	1	

第一學年

1stAcademic Year

科目名稱	英文科目名稱 Course	必修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
多元文化與語文		必修 Required	2	(2)	(2)	共同教育課程 通識中心開課 Common Education Courses Provided by General Studies Center
程式語言	Programming Language	必修 Required	2	2	0	共同教育課程 通識中心開課 Common Education Courses Provided by General Studies Center
大學之道	Foundation of University Education	必修 Required	1	1	0	共同教育課程 通識中心開課 Common Education Courses Provided by General Studies Center
服務學習	Service Learning	必修 Required	1	0	1	共同教育課程 通識中心開課 Common Education Courses Provided by General Studies Center
體育	Physical Education	必修 Required	1	1	0	共同教育課程 體育中心開課 Common Education Courses Provided by Sports Center
體育	Physical Education	必修 Required	1	0	1	共同教育課程 體育中心開課 Common Education Courses Provided by Sports Center
必修學分合計 Required Credits Subtotal			26	14	14	

第二學年

2ndAcademic Year

科目名稱	英文科目名稱 Course	必修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
細胞生物學	Cell Biology	必修 Required	3	3	0	
細胞生物學實驗	Cell Biology Laboratory	必修 Required	1	1	0	
生物化學	Biochemistry	必修 Required	2	2	0	
生醫生物化學	Biomedical Biochemistry	必修 Required	2	0	2	
生物化學實驗	Biochemistry Laboratory	必修 Required	1	1	0	
生理學(一)	Physiology(I)	必修 Required	2	2	0	

第 二 學 年
2nd Academic Year

科目名稱	英文科目名稱 Course	必選 修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
生理學(二)	Physiology(II)	必修 Required	2	0	2	
生理學實驗	Physiology Laboratory	必修 Required	1	0	1	
書報討論(三)	Discussion in Literature(III)	必修 Required	1	1	0	
書報討論(四)	Discussion in Literature(IV)	必修 Required	1	0	1	
遺傳學	Genetics	必修 Required	3	0	3	
分子生物學	Molecular Biology	必修 Required	3	0	3	
分子生物學實驗	Molecular Biology Laboratory	必修 Required	1	0	1	
專題研究實驗(一)	Research on Special Topics-Laboratory Practice(I)	選修 Elective	2	2	0	
專題研究實驗(二)	Research on Special Topics-Laboratory Practice(II)	選修 Elective	2	0	2	
生醫學生的職涯規劃	Career Planning for Biomedical Students	選修 Elective	1	1	0	專業選修 Professional electives
大數據分析	Big Data Analysis	選修 Elective	2	2	0	
公共衛生學	Introduction to Public Health	選修 Elective	2	2	0	
藥物質譜分析技術	Mass Spectrometry for Drug Testing	選修 Elective	2	2	0	
生物資訊學原理	Principle of Bioinformatics	選修 Elective	2	2	0	專業選修 Professional electives
生醫藥妝品學與技術	Biomedical Cosmeceuticals and Technology	選修 Elective	2	0	2	專業選修 Professional electives
人工智慧與機器學習實務應用	Introduction to Artificial Intelligence and Machine Learning	選修 Elective	2	0	2	
檢測試劑開發概論	Introduction of diagnostic reagents development	選修 Elective	1	0	1	
生態學	Ecology	選修 Elective	2	0	2	
進階 Python 程式設計	Advanced Python programming	選修 Elective	2	2	0	

第二學年 2nd Academic Year						
科目名稱	英文科目名稱 Course	必選 修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
體育	Physical Education	必修 Required	1	1	0	共同教育課程 體育中心開課 Common Education Courses Provided by Sports Center
體育	Physical Education	必修 Required	1	0	1	共同教育課程 體育中心開課 Common Education Courses Provided by Sports Center
必修學分合計 Required Credits Subtotal			25	11	14	

第三學年 3rd Academic Year						
科目名稱	英文科目名稱 Course	必選 修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
發育生物學	Developmental Biology	必修 Required	2	2	0	
生物資訊學	Bioinformatics	必修 Required	2	2	0	
微生物學及免疫學	Microbiology & Immunology	必修 Required	4	2	2	
微生物學及免疫學實驗	Microbiology & Immunology Laboratory	必修 Required	2	1	1	
人類遺傳學	Human Genetics	必修 Required	2	2	0	
文獻討論(一)	Seminar(I)	必修 Required	1	1	0	
文獻討論(二)	Seminar(II)	必修 Required	1	0	1	
神經生物學	Neurobiology	必修 Required	3	0	3	
生物技術學(一)	Biotechnology (I)	必修 Required	2	0	2	
分子遺傳學	Molecular Genetics	必修 Required	3	0	3	
專題研究實驗(三)	Research on Special Topics-Laboratory Practice(III)	選修 Elective	2	2	0	
專題研究實驗(四)	Research on Special Topics-Laboratory Practice(IV)	選修 Elective	2	0	2	
生技單元操作實驗(一)	Unit Operation Experiment in Biotechnology(I)	選修 Elective	2	2	0	

第三學年

3rd Academic Year

科目名稱	英文科目名稱 Course	必修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
生技單元操作實驗(二)	Unit Operation Experiment in Biotechnology(II)	選修 Elective	2	0	2	
刑事鑑識概論	Introduction to Forensic Science	選修 Elective	2	2	0	專業選修 Professional electives
生物製藥概論	Introduction to Biopharmaceuticals	選修 Elective	2	2	0	
腫瘤生物學	Cancer Biology	選修 Elective	2	2	0	
藥物化學概論	Introduction to Medicinal Chemistry	選修 Elective	2	2	0	
生醫蛋白質體學概論	Introduction to Proteomics in Biomedical Sciences	選修 Elective	2	2	0	
酵素學	Enzymology	選修 Elective	2	0	2	專業選修 Professional electives
幹細胞醫學	Stem Cell Medicine	選修 Elective	2	0	2	專業選修 Professional electives
必修學分合計 Required Credits Subtotal			22	10	12	

第四學年

4th Academic Year

科目名稱	英文科目名稱 Course	必修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
生物醫學文獻討論(一)	Seminar in Biomedical Sciences(I)	必修 Required	1	1	0	
生物醫學文獻討論(二)	Seminar in Biomedical Sciences(II)	必修 Required	1	0	1	
生物技術學(二)	Biotechnology (II)	選修 Elective	2	2	0	專業選修 Professional electives
生技實習(一)	Practice in Biotechnology(I)	選修 Elective	2	2	0	
生技實習(二)	Practice in Biotechnology(II)	選修 Elective	2	2	0	
基因工程技術	Genetic Engineering	選修 Elective	2	2	0	
藥理學概論	Introduction to Pharmacology	選修 Elective	2	0	2	

第 四 學 年

4th Academic Year

科目名稱	英文科目名稱 Course	必選 修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
實驗動物醫學概論	Introduction to Laboratory Animal Medicine	選修 Elective	2	0	2	
老化分子機制	Molecular Mechanism of Aging	選修 Elective	2	0	2	專業選修 Professional electives
生物科技與生活	Biotechnology and Life	選修 Elective	2	0	2	
分子與生命	Molecules and Life	選修 Elective	2	0	2	
必修學分合計 Required Credits Subtotal			2	1	1	

最低畢業學分數 128 學分，必修 65 學分，通識 20 學分，體育 4 學分，選修 39 學分

Minimum graduation credits: 128 credits, compulsory 65 credits, general education 20 credits, physical education 4 credits, elective 39 credits

說明 Instructions :

- 通識教育課程總學分數為 20 學分，學生需修滿學分數，始得申請畢業。課程內容分為「基礎通識」及「博雅通識」等兩大部分，修習原則如下：(一)「基礎通識」課程：必修，共 6 學分。包括：「多元文化與語文」、「程式語言」、「大學之道」及「服務學習」等課程。(二)「博雅通識」課程：必修，共 14 學分(醫資系除外，需 16 學分)。包括：「醫學人文領域通識」、「學群通識」等課程。通識教育課程畢業學分的認列，以 20 學分為上限。通識教育課程修習方式依照「中山醫學大學通識課程選課須知」辦理。「服務學習」依照「中山醫學大學服務學習課程實施辦法」辦理。 The total number of credits required for the General Education Curriculum is 20. Students must complete these credits in order to apply for graduation. The curriculum is divided into two main parts: "Fundamental General Education" and "Liberal Arts General Education." The guidelines for course completion are as follows: Fundamental General Education Courses: These are mandatory and total 6 credits. They include courses such as "Multiculturalism and Languages," "Programming Languages," "Foundation of University Education," and "Service Learning." Liberal Arts General Education Courses: These are also mandatory and total 14 credits. They cover four domains: Literature and Arts, Social Sciences, Humanistic Medicine, and Science and Technology. At least 2 credits must be completed in each domain. The maximum number of credits recognized for the General Education Curriculum towards graduation is 20. The enrollment procedures for the General Education Curriculum are to be followed according to the "Guidelines for General Education Course Selection at Chung Shan Medical University." The "Service Learning" component is to be conducted in accordance with the "Implementation Guidelines for Service Learning Courses at Chung Shan Medical University."
- 學生須於畢業前擇一參加經認定之校外官方英文能力檢定考試或校內「中山醫大英文能力檢測」(CEPT)英文檢定考試，相當全民英檢中級初試，並於每學期開學後繳交通過之成績證明文件至各系登錄，以作為畢業資格審定之依據。 Students are required to participate in an officially recognized external English proficiency test or the university's internal "Chung Shan Medical University English Proficiency Test" (CEPT) before graduation. The required proficiency level is equivalent to the preliminary test of the GEPT Intermediate Level. After the start of each semester, students must submit their passing score documents to their respective departments for registration, which will serve as a basis for graduation qualification verification

第 四 學 年

4th Academic Year

科目名稱	英文科目名稱 Course	必選 修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semester Credits	第二 學期 2 nd Semester Credits	備註 Remarks
3.	學生須依「中山醫學大學深化醫能力百分百實施辦法」參加各項符合增益基本能力之活動並累積至少 100 點，始得畢業。 Students must participate in various activities that enhance their basic competencies in accordance with the "Implementation Guidelines for Enhancing Soft Skills at Chung Shan Medical University" and accumulate at least 100 points in order to graduate.					
4.	學生須於畢業前擇一修習雙主修、輔系、跨域學程或跨域微學程，符合修習規範者，始得畢業。 Students are required to choose a double major, a minor, an interdisciplinary program, or an interdisciplinary micro-program before graduation. Only those who meet the study standards can graduate.					
5.	增加:跨域微學程認列之科目於下列情況不可重複認列學分數：1、其他跨域微學程之科目。2、學生主系之科目(包含必修、選修、專業選修)及通識課程。 Courses recognized in the interdisciplinary micro-study program cannot be recognized as credits repeatedly under the following circumstances: 1. Courses in other interdisciplinary micro-study programs. 2. Courses of the student's major (including compulsory, elective, and professional electives) and general courses.					
6.	至少選修 6 學分專業選修課程，始得畢業。 At least 6 credits of professional elective courses must be taken for graduation.					
7.	為強化學生銜接學術研究及就業的競爭力，本系學士班學生於畢業前，必須至少選修一門專業實務能力養成進階課程且成績及格，始得畢業。專業實務能力養成進階課程包括「專題研究實驗(一)(二)(三)(四)」，「生技單元 操作實驗(一)(二)」，「生技實習(一)(二)」。本項目之學分不列入本系專業選修 6 學分計算。 Students are required to take at least one advanced practical skills development course and pass it before graduation to enhance their academic research and employment competitiveness. Courses include "Research Experiment (I)(II)(III)(IV)," "Biotechnology Unit Operation Experiment (I)(II)," and "Biotechnology Internship (I)(II)." These credits are not part of the professional elective 6-credit calculation.					
8.	學生修 coursera 課程(https://www.coursera.org)修畢取得修課學分證明，至多抵 4 選修學分。 Completion of Coursera courses with a credit certification can substitute for up to 4 elective credits. This summary highlights the academic expectations and requirements that students must fulfill to graduate from the university.					