

中山醫學大學

Chung Shan Medical University

114 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

健康管理學院醫學應用化學系

Department of Medical Applied Chemistry, College of Health Care and Management

第一學年

1st Academic Year

科目名稱 Course Name in Chinese	科目英文名稱 Course Name in English	必修 Required Elective	合計 學分 Credits Subtotal	第一 學期 1 st Semest er Credits	第二 學期 2 nd Semester Credits	備註 Remarks
普通化學	General Chemistry	必修 Required	4	4	0	
普通生物學	General Biology	必修 Required	2	2	0	
微積分(一)	Calculus(I)	必修 Required	2	2	0	
普通化學實驗	General Chemistry Laboratory	必修 Required	1	1	0	
分析化學(一)	Analytical Chemistry(I)	必修 Required	3	0	3	
普通物理學	General Physics	必修 Required	2	0	2	
健康醫學概論	Introduction to Health Medicine	必修 Required	2	0	2	
分析化學實驗(一)	Analytical Chemistry Laboratory (I)	必修 Required	1	0	1	
微積分(二)	Calculus(II)	必修 Required	1	0	1	
生物技術概論	Introduction to Biotechnology	選修 Elective	2	2	0	
3D 列印：積層製造技術與應用	3D Printing, Additive Manufacturing	選修 Elective	2	2	0	
普通物理學實驗	General Physics Laboratory	選修 Elective	1	1	0	
永續發展探索	Exploration of Sustainability	選修 Elective	1	1	0	
檢測應用	Detection Application	選修 Elective	1	1	0	
生物統計學	Biostatistics	選修 Elective	2	0	2	
環境化學	Environmental Chemistry	選修 Elective	2	0	2	
光電材料概論	Introduction to Electro-optic Material	選修 Elective	2	0	2	
化妝品調製學	Cosmetic Manufacture	選修 Elective	2	0	2	
應用化學導論	Introduction to Applied Chemistry	選修 Elective	2	0	2	

第一學年

1st Academic Year

科目名稱 Course Name in Chinese	科目英文名稱 Course Name in English	必修 Required	合計 學分 Credits Subtotal	第一 學期 1 st Semest er Credits	第二 學期 2 nd Semester Credits	備註 Remarks
普通生物學實驗	General Biology Laboratory	選修 Elective	1	0	1	
化學與生物感測技術導論	Introduction to Chemo-and Biosensors Technology	選修 Elective	1	0	1	
醫學與應用化學	Medicine and Applied Chemistry	選修 Elective	1	0	1	
化學醫藥品之智慧財產保護概論	Introduction to Intellectual Property Protection of Chemical Pharmaceuticals	選修 Elective	1	0	1	
科學加工	Scientific Processing	選修 Elective	1	0	1	
必修學分合計 Required Credits Subtotal			18	9	9	

多元文化與語文		必修 Required	2	(2)	(2)	
程式語言	Programming Language	必修 Required	2	0	2	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	(1)	(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

第二學年 2 nd Academic Year						
科目名稱 Course Name in Chinese	英文科目名稱 Course Name in English	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
有機化學(一)	Organic Chemistry (I)	必修 Required	3	3	0	
分析化學(二)	Analytical Chemistry (II)	必修 Required	3	3	0	
生物化學(一)	Biochemistry(I)	必修 Required	2	2	0	
分析化學實驗(二)	Analytical Chemistry Laboratory (II)	必修 Required	1	1	0	
有機化學實驗(一)	Organic Chemistry Laboratory (I)	必修 Required	1	1	0	
有機化學(二)	Organic Chemistry (II)	必修 Required	3	0	3	
無機化學(一)	Inorganic Chemistry (I)	必修 Required	3	0	3	
生物化學(二)	Biochemistry(II)	必修 Required	2	0	2	
儀器分析(一)	Principles of Instrumental Analysis(I)	必修 Required	2	0	2	
藥妝品學	Cosmeceuticals	必修 Required	2	0	2	
有機化學實驗(二)	Organic Chemistry Laboratory (II)	必修 Required	1	0	1	
儀器分析實驗(一)	Instrumental Analysis Laboratory(I)	必修 Required	1	0	1	
藥物學	Materia Medica	選修 Elective	2	2	0	
科技英文與數位工具應用實務	Digital Tools and Practice for learning Scientific English	選修 Elective	2	2	0	
特用化學品	Specialty Chemicals	選修 Elective	2	2	0	
奈米科技概論	Introduction to Nanotechnology	選修 Elective	2	2	0	
芳香療法	Aromatherapy	選修 Elective	2	2	0	
醫用材料化學概論	Introduction to Medical materials Chemistry	選修 Elective	3	0	3	
綠色化學	Green Chemistry	選修 Elective	2	0	2	
生醫材料導論	Introduction to Biomaterials	選修 Elective	2	0	2	
醫藥高分子化學	Medical Polymer Chemistry	選修 Elective	2	0	2	114-1-2 課委會 刪除
高分子化學與循環設計	Polymer Chemistry and Circular Design	選修 Elective	2	0	2	114-1-2 課委會 新增
必修學分合計 Required Credits Subtotal			24	10	14	

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

第三學年 3rd Academic Year						
科目名稱 Course Name in Chinese	英文科目名稱 Course Name in English	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
物理化學(一)	Physical Chemistry(I)	必修 Required	3	3	0	
無機化學(二)	Inorganic Chemistry(II)	必修 Required	3	3	0	
醫藥品設計與合成	Drug Design and Synthesis	必修 Required	2	2	0	
書報討論(一)	Discussion in Literature (I)	必修 Required	1	1	0	
物理化學實驗(一)	Physical Chemistry Laboratory(I)	必修 Required	1	1	0	
物理化學(二)	Physical Chemistry(II)	必修 Required	3	0	3	
藥物化學	Medicinal Chemistry	必修 Required	2	0	2	
書報討論(二)	Discussion in Literature (II)	必修 Required	1	0	1	
儀器分析(二)	Principles of Instrumental Analysis(II)	選修 Elective	2	2	0	
有機光譜	Spectroscopy for Organic Chemistry	選修 Elective	2	2	0	
專題研究(一)	Independent Study(I)	選修 Elective	2	2	0	
保健科技學	Introduction to Health Science	選修 Elective	2	2	0	
藥物與化妝品分析	Pharmaceutical and Cosmetic Analysis	選修 Elective	2	2	0	
醣化學	Introduction of Carbohydrate Chemistry	選修 Elective	2	2	0	
儀器分析實驗(二)	Instrumental Analysis Laboratory(II)	選修 Elective	1	1	0	
專題研究(二)	Independent Study (II)	選修 Elective	2	0	2	
專案管理	Project Management	選修 Elective	2	0	2	
生物質譜學	Biological Mass Spectrometry	選修 Elective	2	0	2	
有機合成	Organic Synthesis	選修 Elective	2	0	2	

第三學年

3rd Academic Year

科目名稱 Course Name in Chinese	英文科目名稱 Course Name in English	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
材料分析	Material Analysis	選修 Elective	2	0	2	
醫藥無機化學概論	Introduction to Medicinal Inorganic Chemistry	選修 Elective	2	0	2	
美容藥物學	Cosmetic Pharmacology	選修 Elective	2	0	2	
有機人名反應與應用	Organic Name Reactions and Applications	選修 Elective	2	0	2	
配位化學	Coordination Chemistry	選修 Elective	2	0	2	
製藥技術	Pharmaceutical Technology	選修 Elective	2	0	2	114-1-2 課委會 刪除
臨床生醫材料	Clinical Biomedical Materials	選修 Elective	2	0	2	
有機化學特論	Special Topics in Organic Chemistry	選修 Elective	1	0	1	
核醫藥物暨放射化學概論	Introduction to Radiochemistry and Nuclear Pharmacy	選修 Elective	1	0	1	
物理化學實驗(二)	Physical Chemistry Laboratory(II)	選修 Elective	1	0	1	
人工智慧與有機化學	Artificial Intelligence in Organic Chemistry	選修 Elective	1	0	1	
必修學分合計 Required Credits Subtotal			16	10	6	

第 四 學 年

4th Academic Year

科目名稱 Course Name in Chinese	英文科目名稱 Course Name in English	必/選修 Required Elective	合計學分 Credits Subtotal	第一學期 1st Semester Credits	第二學期 2 nd Semester Credits	備註 Remarks
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	
無機化學特論	Special Topics in Inorganic Chemistry	選修 Elective	2	2	0	
專題研究(三)	Independent Study (III)	選修 Elective	2	2	0	
有機金屬化學	Organometallics	選修 Elective	2	2	0	
醫藥化學實習	Practicum Courses in Medicinal Chemistry	選修 Elective	2	2	0	
深度學習在化學上的應用	Deep learning in Chemistry	選修 Elective	2	2	0	
化學產業發展	Development of Chemical Industries	選修 Elective	2	0	2	
專題研究(四)	Independent Study (IV)	選修 Elective	2	0	2	
生物無機化學導論	Introduction to Bioinorganic Chemistry	選修 Elective	2	0	2	
必修學分合計 Required Credits Subtotal			2	1	1	
<p>最低畢業學分數 128 學分，必修 60 學分，通識 20 學分，體育 4 學分，選修 44 學分</p> <p>Minimum graduation credits: 128 credits, compulsory 60 credits, general education 20 credits, physical education 4 credits, elective 44 credits</p>						

說明 Instructions :

1	<p>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。含括：「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)。含括：文藝領域、社會領域、人文醫學領域和科普領域等四個領域，每個領域至少需修習 2 學分。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。</p> <p>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:</p> <p>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."</p> <p>Liberal Arts General Education Courses: These are also mandatory and total 14 credits (16 credits for the Department of Medical Informatics). 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.</p> <p>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."</p>
2	<p>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。</p> <p>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. 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.</p>
3	<p>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。</p> <p>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.</p>
4	<p>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。</p> <p>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.</p>
5	<p>跨域微學程認列之科目於下列情況不可重複認列學分數：</p> <p>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。</p> <p>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.</p> <p>◆建議本系學生優先選擇「外系」所開設之跨域微學程，以落實跨域學習精神。</p> <p>◆為避免選修課程與本系主修課程學分無法重複認列之疑慮，建議不要選擇主系開設之「醫學與應用」跨域微學程。</p>
6	<p>系選修至少須滿 20 學分，方可畢業。</p> <p>Students need to complete at least 20 credits of specialized elective courses offered by their department in order to graduate.</p>