長庚大學 生物醫學工程學系 大學部 必選修科目表 （113學年度入學學生適用）
Curriculum of the Bachelor Program at the Department of Biomedical Engineering, Chang Gung University
(For students admitted in Fall, 2024)

	科目名稱 Course Title	一 1	一 2	科目名稱 Course Title	二 1	二 2	二 暑	科目名稱 Course Title	三 1	三 2	三 暑	科目名稱 Course Title	四 1	四 2
必修 Compulsory courses	微積分(1) Calculus (1)	2		工程數學(微分方程) Engineering Mathematics	3			專題研究(1) Seminar(1)	1					
	普通物理學 General Physics	2		工程力學 Engineering Mechanics	3			基礎細胞分子生物學 Basic Molecular Cell Biology	3					
	普通物理學實驗 General Physics	1		生物統計學 Biostatistics	2			生理學實驗 Physiology Experiment	1					
	材料科學導論 Introduction of Materials Science	3		解剖學 Anatomy	2			專題研究(2) Seminar(2)		1				
	計算機概論 Introduction to Computer Science	3		電路學實驗 Circuit Theory Laboratory	1			臨床工程概論 Introduction to Biomedical and Clinical		1				
	醫工概論-創意實作(1)(2) Introduction to Biomedical Engineering – Innovation and Practice	2	2	工程數學(線性代數) Engineering Mathematics (Linear Algebra)		3		醫材專利與法規 An Introductory Guide for Medical Device Regulation and Patent		2				
	微積分(2) Calculus (2)		2	儀器分析 Instrumental Analysis		3		生醫科技創新設計 Biomedical Design Innovation		2				
	普通化學 General Chemistry		2	生理學 Physiology		3								
	普通化學實驗 General Chemistry Laboratory		1	研究方法 Research Methods		2								
	普通生物學 General Biology		2											
	普通生物學實驗 General Biology		1											
	電路學(1) Electric Circuits (I)		3											
小計 Subtotal		13	13		11	11			5	6				
必選 (三選一) Compulsory Courses (Choose One of Three Options)												學士論文 Bachelor's Thesis	1	
												企業實習 Industrial Practical Training	6	
					海外研習 Overseas Study						1	海外研習 Overseas Study	1	
選修 Elective courses / 學院共構 College co-constructed Courses					英語口說與報告(1) English Speaking and Presentation(1)	2								
					英語口說與報告(2) English Speaking and Presentation(2)		2							
醫療機電與力學 Medical Mechatronics and Mechanics				電路學(2) Electric Circuits (2)	3			電子學(1) Microelectronics (1)	3			校外實習 Practice School	4	
				材料與力學實驗 Experiments for Materials and	1			電子學實驗(1) Electrical circuit laboratory (1)	1			*輔具開發與植體設計 Technical Aids and Medical	3	
				生物力學導論 Introduction to Biomechanics		3		材料力學 Mechanics of Materials	3			*工程聲學 Sound and Acoustics	3	
				訊號與系統 Signal & System		3		*生醫訊號處理 Biomedical signal processing	3			*骨科實驗力學 Experimental Mechanics for Orthopaedics	3	
								人因工程概論 The Introduction to Human Factors Engineering		2		*微機電概論實驗 Fundamental MEMS Lab		1
								電子學(2) Microelectronics (2)		3		*生醫感測 Biomedical Sensing		3
								電子學實驗(2) Electrical Circuit Laboratory (2)		1		*聽力維護與噪音控制 Hearing Conservation and Noise Control		3
								*快速成型實驗 Rapid Prototyping Labs		1		*醫療器材品質認證 The Evaluation and Quality System of Medical		3
								*微流體技術 Microfluidic Technology		2				

核心專業領域選修 Core Professional Elective Courses

生醫材料與感測 Biomaterials and Bio-sensing

課程	學分	課程	學分	課程	學分
有機化學(1) Organic Chemistry (1)	3	高分子材料導論 Introduction to polymer materials	2	校外實習 Practice School	4
生醫材料概論 An Introduction to Biomaterials Sciences	3	*表面分析技術 Surface Analysis Technology	3	*奈米生物技術之醫學應用 Applications of Nanobiotechnonlgy in Medicine	2
材料與力學實驗 Experiments for Materials and	1	*控制釋放技術 Controlled Release Technology	3	*生醫材料分析方法(含實驗) Analytic Methods for Biomaterials	1
生物化學 Biochemistry	2	*生醫高分子 Introduction of	3	*生醫感測 Biomedical Sensing	3
有機化學(2) Organic Chemistry (2)	3	*微流體技術 Microfluidic Technology	2	*生醫光電技術 Bio-photonics Techniques	3
有機化學實驗 Organic Chemistry Laboratory	1			*醫療器材品質認證 The Evaluation and Quality System of Medical	3

生醫資訊與影像 Biomedical Informatics and Imaging

課程	學分	課程	學分	課程	學分	課程	學分
程式語言 Programming	3	程式設計與演算法 Programming and Algorithms	3	生物資訊設計 Computational bioinformatics design	3	校外實習 Practice School	4
		資料結構與演算法(1) Data Structure and Algorithms(1)	3	*生醫訊號處理 Biomedical signal processing	3	*精準醫療與生醫資訊 The bioinformatics to precision medicine	3
		資料結構與演算法(2) Data Structure and Algorithms(2)	3	電子學(1) Microelectronics (1)	3	*生醫光電技術 Bio-photonics Techniques	3
		機器學習概論 Introduction to Machine Learning	3	電子學實驗(1) Electrical Circuit Laboratory (1)	1	*機器學習與其醫學應用 Machine Learning and Its Medical Applications	3
		訊號與系統 Siginal & System	3	電子學(2) Microelectronics (2)	3		
		資料庫系統設計 Database System	3	電子學實驗(2) Electrical Circuit	1		
		網頁程式設計 Web Programming	3	*醫學影像與AI診斷 Medical Imaging Analysis and AI in Medical Diagnostics	3		
				*快速成型實驗Rapid Prototyping Labs	1		

備註 Remarks

一、畢業學分：128學分
　1.必修59學分。
　2.選修40學分。
　　(1)含必選三選一（「海外研習」包含雙聯學位計畫，其中選擇「學士論文」者，於預計完成學士論文之學期再選修）。
　　(2)系選修至少30學分。本系三大核心專業領域「醫療機電與力學」、「生醫材料與感測」、「生醫資訊與影像」，其中必須
　　　　包含二個領域選修課程至少23學分，若一課程歸屬於多領域時，此課程僅可擇一領域計算學分。
　　(3)至多承認外系10學分(通識課程、體育選修及全民國防教育軍事訓練選修課程不予列入)。
　　(4)學院共構選修課程列入外系選修。
　3.通識學分：請詳見通識中心修課規定。英文領域、核心、多元課程29學分。。
二、以「*」標示者：醫工系碩士班開設之該門課程，學士班學生得選修並可列入畢業學分計算。
三、體育大一、大二必修0學分。
四、【深耕學園】必修0學分，請詳見學務處深耕學園專區說明。
五、本校訂有英文畢業門檻，須達校訂標準方可畢業，請詳見語文中心規定。
六、學生需先完成海外交換學習歸國後，始可選修本「海外研習」課程。

1. Graduation credits: 128
　(a) Credits for compulsory courses: 59
　(b) Credits for elective courses: 40
　　(1) Including the compulsory courses (choose one of three options). Joining dual degree program is also considered as "Overseas Study". Students should enroll in the "Bachelor's Thesis" when they expect to complete their thesis in the corresponding semester.
　　(2) At least 30 credits of BME elective courses. The BME elective courses are divided into three professional areas: Medical Mechatronics and Mechanics, Biomaterials and Bio-sensing, and Biomedical Informatics and Imaging. Students should take 23 credits from the professional areas in two different fields. If a course belongs to multiple areas, it can only be counted toward one area for credit calculation.
　　(3) A maximum of 10 credits of elective courses from other departments (excluding general education courses, physical education electives, and military training electives)
　　(4) The college co-constructed courses are counted as electives of other departments.
　(c) Credits for General Education courses (including English, core ability, and diverse courses, please refer to the course regulations of Center for General Education): 29
2. The courses marked with "*" are offered by the Master's program in Department of Biomedical Engineering and Bachelor's students are eligible to take these courses, and the credits can be counted toward graduation requirements.
3. Physical Education is a mandatory, non-credit course for freshmen and sophomores.
4. "Shengeng Academy" is a mandatory course, non-credit course. For more details, please refer to the website of the Office of Student Affairs.
5. Students must meet the criteria of English Proficiency Assessment before graduation. Please refer to the regulations of the Language Center for details.

6. Students need to complete the overseas exchange study and return to CGU before taking the "Overseas Study" course.

系主任簽章: ＿＿＿＿＿＿＿＿＿＿＿＿＿　　　日期：

系主任簽章: ＿＿＿＿＿＿＿＿＿＿＿＿＿　　　日期：