

Ming Chuan University Biomedical Engineering Department Course Outline for all students entered on August 2023

2023.03.28

Course	Credits	Hrs	1 <sup>st</sup> year				2 <sup>nd</sup> year				3 <sup>rd</sup> year				4 <sup>th</sup> 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	
00123 Chinese Literature: Appreciation and Creative Writing I	2	2	2															Graduation Requirement 1	
00124 Chinese Literature: Appreciation and Creative Writing II	2	2			2														
01108 Practical English I	0	2	1	1														Graduation Requirement 1	
01109 Practical English II	0	2			1	1													
01208 Practical English III	0	2				1	1												
01209 Practical English IV	0	2					1	1											
01306 English for Business Communication I	2	3								2	1								
01307 English for Business Communication II	2	3										2	1						
01406 Practical English for Professionals I	2	3												2	1				
01407 Practical English for Professionals II	2	3														2	1		
00911 Introduction of Artificial Intelligence	2	3	2	1														Graduation Requirement 1	
13285 Programming Design	2	3			2	1													
General Education	12	12																Graduation Requirement 2	
00121.00122.00221.00222 Physical Education I~IV	0	8	2		2		2		2									Graduation Requirement 1	
Subtotal	28	50	7	2	7	2	3	1	3	1	2	1	2	1	2	1	2	1	
Professional Required	35109 Calculus I	3	4	3	1														
	67128 Physics	3	3	3															
	67129 Physics Lab	1	3	1	2														
	67115 General Biology	3	3	3															
	67127 Introduction to Medical Materials Industry	1	1	1															
35110 Calculus II	3	4			3	1													

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				class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
Courses	67122 Electronic Circuits	3	3			3														
	67116 General Biology Lab	1	3			1	2													
	67123 Organic Chemistry	3	3			3														
	67126 Introduction to Biomedical Engineering	1	3			3														
	67228 Engineering Mathematics I	3	3					3												
	67243 Electronics I	3	3					3												
	67217 Electronic Circuits Lab I	1	3					1	2											Service Learning
	67214 Anatomy and Physiology I	3	3					3												
	67226 Biochemistry	3	3					3												
	67245 Programming Design I	2	3					2	1											Computer Courses.
	67229 Engineering Mathematics II	3	3							3										
	67244 Electronics II	3	3							3										
	67220 Electronic Circuits Lab II	1	3							1	2									Service Learning
	67223 Signals and Systems	3	3							3										
	67221 Anatomy and Physiology II	3	3							3										
	67246 Programming Design II	2	3							2	1									Computer Courses.
	67323 Biomedical Engineering Lab I	1	3									1	2							
	67325 Biostatistics	3	3									3								
	67324 Biomedical Engineering Lab II	1	3											1	2					
	67326 Technical Article Reading and Presentation	1	3											3						
67417 Biomedical Engineering Ethics	1	1																1		
Subtotal		59	79	11	3	13	3	15	3	15	3	4	2	4	2	0	0	1	0	
Professional	Me dic al Mat	67253 Database Management	2	3						2	1									Computer Courses.
		67255 Medical Devices Quality System	3	3									3							Distance Learning Courses.
		67361 Medical Electronics	3	3											3					Change Fall to Spring.

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			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
Elective Courses	67365 Internships Abroad	2	2								2								
	67367 Introduction to Medical Information	3	3								3								Computer Courses.
	67366 Internship in Hospital and Medical Enterprise I	1	2										2						Graduation Requirement 4
	67359 Clinical Instrumental Analysis	3	3										3						
	67368 Medical Devices Regulations and Practices	3	3								3								New.
	67466 Internship in Hospital and Medical Enterprise II	1	2												2				Graduation Requirement 4
	67458 Medical Engineering Lab	3	8												3	5			
	67453 Healthcare Photoelectric System	3	3												3				
	67460 Patent Engineering	3	3														3		
	67462 Introduction to Nano Biomedicine	3	3												3				Change Spring to Fall.
Smart Medical Treatment Program	67259 Anatomy and Physiology Lab I	1	3				1	2											New. Change Required to Elective.
	67260 Anatomy and Physiology Lab II	1	3						1	2									New. Change Required to Elective.
	67261 Materials Science and Innovative Medical Materials	3	3							3									New. Change Course Name.
	67356 Digital System Design	3	3							3									Computer Courses.
	67352 Biomedical Materials	3	3								3								
67353 Introduction to Clinical Medicine	3	3								3									

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			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
67364 Microprocessor	3	3										3						Computer Courses.	
67357 Biomedical Signal Processing	3	3											3					Computer Courses.	
67467 Research Project I	1	2													2			Graduation Requirement 4	
67461 Biosensor	3	3															3	Change Fall to Spring.	
67455 Tissue Engineering	3	3													3				
BE076 IHE Smart Integrated Interface	3	3													3			Computer Courses.	
67468 Research Project II	1	2															2	Graduation Requirement 4	
67151 Introduction to Computer Science	2	3	3	0														Computer Courses. Change Class Hours.	
67457 Complementary Medicine Engineering	3	3															3		
67463 Technical English Writing	2	2													2			English Courses	
67464 Technical English Presentation	2	2															2	English Courses	
BE077 Internship	3	3													3			7+1 Internship as Career Program Courses	
BE078 Advanced Internship	3	3															3		
BE079 Seminar on Industry Practice	3	3															3		
00134 Nursing Education I	0	2	2																
00135 Nursing Education II	0	2			2														
00241 All-out Defense Education Military Training A	0	2	2																
00242 All-out Defense Education Military Training B	0	2			2														

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			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
00243 All-out Defense Education Military Training C	0	2					2												
00244 All-out Defense Education Military Training D	0	2						2											
ZZA01 Physical Education IV	2	2													2				
ZZA02 Physical Education IV	2	2															2		
<b>Subtotal Required Course Credits</b>	<b>87</b>																		
<b>At least Elective Course Credits</b>	<b>41</b>																		
<b>Subtotal Professional Elective Course Credits</b>	<b>22</b>																		
<b>Outside the department must admit Elective Course Credits</b>	<b>19</b>																		
<b>Grand Total</b>	<b>128</b>																		

**Graduation Requirements :**

1. 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.
2. Students 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. Course credits obtained from Education Program cannot be counted toward students' final grades.
4. Internship in Hospital and Medical Enterprise I, Internship in Hospital and Medical Enterprise II, Research Project I, Research Project II, those are elective advanced courses that the Department leads students to conduct integrated practical courses in biology, medicine and engineering. Students need to complete one of the following two combination courses for graduation.
  - (1) Internship in Hospital and Medical Enterprise I and Internship in Hospital and Medical Enterprise

II in the Medical Materials Industry Program.

(2) Research Project I and Research Project II in the Smart Medical Treatment Program.

5. The credits of interdisciplinary focused course program are not included in course structure diagram that can be regarded as the other department credits, with a maximum 19 credits.
6. As for retaking professional required courses, students are allowed to take courses from other departments under the conditions of the same course titles or contents, and approval by the department chair. The credits from those retaken courses can be counted toward students' final grades.
7. 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 2020-21 academic year.
8. 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 2021-22 academic year.
9. The newly added elective courses in this academic year can be applied retroactively to students who entered from 2023-24 academic year.