Curriculum of the Bachelor Program at the Department of Biomedical Sciences, Chang Gung University (For students admitted in Fall, 2025)

Required / Elective		Subject	Year 1		Subject	Year 2		Subject	Year 3			Subject	Year 4	
			F	S		F	S		F	S	Su		F	S
Required Courses		General Biology (1)(2)	2	2	Biostatistics	2		Seminar (1)(2)	2	2				
		General Biology Laboratory (1)(2)	1	1	Biochemistry	4		Independent Study (1)(2)	2	2				
		General Physics		2	Biochemistry Laboratory	2		Genetics	3					
		General Chemistry	2		Molecular Biology		2	Immunobiology	2					
		General Chemistry Laboratory	1		Molecular Biology Laboratory		2	Microbiology		2				
		Organic Chemistry		4	Cell Biology		2	Introduction to Omics		2				
		Experimental Organic Chemistry		1	Physiology		3							
		Basic programming language for biologists		2	Physical Education	0	0							
		Physical Education (1)	0	0	Analytical Chemistry	2								
		Research Orientation (1)	1											
		Biomathematics (1)	2											
	Advanced Program in Clinical Trials				Biomedical Data Analysis and Statistical Software		3	Fundamentals of Human Disease	2			*Seminar on Clinical Trials (2)*	*2*	
								Basic Pharmacology		2		Pharmacokinetics and Pharmacodynamics of Clinical Tial	3	
								Talent Cultivation Program for Clinical Trial Works			*3*	Clinical Trial Literature Discussion (2)	2	
								Seminar on Clinical Trials (1)			*2*	Clinical Trial Data Science	2	
								Fundamentals of Epidemiology and Study Design			*2*	Clinical Trial Professional English	2	
								Introduction to Clinical Trial Design and Methods			*2*	Epidemiology Theory	2	
								Bioinformatics Programming and Applications			*2*	Clinical Trial Principles and Methods		2
								Fundamentals of Clinical Trials			*1*	Clinical Trial Talent Development		2
								Clinical Trial Literature Discussion (1)		2				
	Advanced Program in Biotechnology Industry				Molecular Cloning		2	Introduction to Biotechnology Industry	2			Seminar for advanced program in biotechnology industry (1)(2)	2	2
					Advanced Biochemistry		2	Basic Pharmacology		2		Intellectual Properties in Biomedical Industry	2	
					Introduction to Biotechnology Management		3	Biotechnology English		2		Advanced Microbiology	2	
					Research Practice (1)(2)	2	2	Microbiology Laboratory		2		Biotech Industrial Practicum (Summer)	2	
					Biomedical Data Analysis and Statistical Software		3	Strategic Planning for Biomedical Innovation and Start-ups		2		Biopharmaceutical testing Operations (Summer)	2	
					Life Science Technique (1) (Summer)	2		Stem Cell Biology	2			Biopharmaceutical testing		2
								Life Science Technique (2) (Summer)	2			Innovation, creativity and entrepreneurship courses	2	

												Protein biomarker detection and quantification by advanced technologies (Summer)	1	
												Practical course of protein biomarker detection and quantification by advanced technologies (Summer)	1	
												Optical Biosensing	2	
												Separation Science	2	
												Bioinformatic analysis	3	
												Life Science Technique (3) (Summer)	2	
Elective Courses	Advanced Program in Biomedical Research				Advanced Biochemistry		2	Scientific Writing	2			Seminar (3)(4)	2	2
					Research Practice (1)(2)	2	2	Cardiovascular Physiology	2			Undergraduate Thesis Research (1)(2)	2	2
					Introduction to Neuroscience(odd year)	2		Cellular and Synaptic Neurophysiology (even year)	2			Cancer Biology and Cancer Therapy	2	
					Molecular Cloning		2	Introduction to English Scientific Writing and Presentation	2			Epigenetics：Chromatin and Gene Regulation	2	
					Embryology		2	Metabolomics	2			Advanced Microbiology	2	
								Proteomics		2		Biological Model of Cellular Differentiation	2	
								Human Molecular Genetics		2				
								Principles of Developmental Biology		2				
								Basic Pharmacology		2				
								Evolutionary Biology		2				
								Fundamentals of Molecular V irology		2				
								Introduction to Life Science Research		2				
								Big Data Analysis and Visualization	2					
								Bioinformatics	2					
	Advanced English Program in Bioinformatics							Introduction to Biological Databases		3		Bioinformatic analysis	3	
								Bioinformatics	2			Biological Database Management and Applications		3
												Clinical informatics		3
												Seminar (3)(4)	2	2
												Undergraduate Thesis Research (1)(2)	2	2
												Special Topics in Omics	2	
	Others	Biology -Basic (1)(2)	3	3	Introduction to Biophotonics	2		Animal Behavior	2			Life Science Technique (3) (Summer)	2	
		Popular Science Reading		2	Readings in Medical Literature		2	Metabolomics Laboratory (Summer)	2			Life Science Technique (4) (Summer)	2	
		Taiwan Biodiversity		2	Life Science Technique (1) (Summer)	2		Web Design and Applications		2		Innovative Practices and Research (1)(2)	2	2
		Biomathematics (2)		2				Experimental Biology	2			Molecular Medicine	2	
		Humanity & Social Aspect of Science	2					Immune Diseases (odd year)		2		Special Topics in Molecular and Cellular Biology		2

		Research Orientation (2)		1				Biological Psychology		2		Drosophila Model and Human Diseases		2
								Life Science Technique (2) (Summer)	2			Aging and healthy aging		2
								Practical Training for Biomedical Science Laboratory Assistants (Summer)	2			Biological Database and Systems Biology		2
								An animal model: honey bees	2					
								Special Topics in Aging Research	2					
								Molecular genetics and genomic engineering		2				
	Subtotal	Minimum Credits	12	12		12	12		12	12			9	9
		Required Credits (GE credits excluded)	9	12		10	9		9	8			0	0

	Note	1. Graduation Credits: 128 credits. (1) Required Courses: 57 credits. (2) Elective Courses: 46 credits. ① At least 42 credits must be electives from the department. ② Up to 4 credits from other departments can be recognized (excluding general education, physical education, and national defense/military training elective courses). ③ Credits from courses listed under university-level interdisciplinary programs or the Biomedical Science department’ s specialized programs can be included in department electives if the program is completed. (3) General Education Credits: Refer to the General Education Center's course requirements. English, Core, and Multidisciplinary Courses: 25 credits. 2. Physical Education: Mandatory for freshman and sophomore years, 0 credits. 3. English Graduation Requirement: Students must meet the university’ s English proficiency standards to graduate. Refer to the Language Center for details. 4. Specialized Program Requirement: Biomedical Science students must complete at least one of the following programs before graduation: Biomedical Research Program, Biotechnology Industry Program, Clinical Trials Program, All-English Bioinformatics Program, Basic Clinical Trials Program (summer program) 5. Course Prerequisites: (a) Introduction to Clinical Trial Design and Methods: Requires prior completion of the 2-credit Introduction to Biostatistics. (b) Clinical Trial Pharmacokinetics and Pharmacodynamics: Requires prior completion of the 2-credit Introduction to Pharmacology. (c) Advanced Biochemistry: Requires prior completion of the 4-credit Biochemistry. (d) Molecular genetics and genomic engineering: Requires prior completion of the 2-credit Molecular Biology. 6 .Dual Majors: Students from other departments pursuing a dual major in this department are exempt from completing one of this department’ s specialized graduation programs. Students from this department pursuing a dual major in another department are also exempt if they meet the dual major requirements of the other department.

Department Chair： Committee Chair: Administrative: