

# Department of Biomedical Sciences, National Chung Cheng University

## Guideline for graduation (for students admitted after 2022)

I. A minimum of 128 credits is required for graduation, which includes the credits of courses from the following categories: ( 1 ) General education: <b>28 credits</b> ( 2 ) Major compulsory courses for major in biomedical sciences: <b>60 credits</b> ( 3 ) Major elective courses for major in biomedical sciences: <b>22 credits</b> ( 4 ) Unrestricted selective courses: <b>18 credits</b>								
II. The curriculum	Year 1		Year 2		Year 3		Year 4	
(1) General education 28 credits	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Ability of Chinese/English course: Chinese Language Knowledge and Application (4 credits of the subtotal courses) English ability training (4 credits of the subtotal courses)	2 2	2 2						
Others: At least one course is required from each of the five categories (1 through 5, total of 5 courses) designated under the <u>General Education Course Program</u> and <u>Information Competence course program</u> . The remaining credits can be fulfilled by taking courses offered from <u>Information Competence course program</u> , <u>General Introductory course program</u> , and all six branches under <u>General Education Course Program</u> .	<ul style="list-style-type: none"> <li>★ Please refer to “<u>Guideline for Studying General Education at National Chung Cheng University</u>” for more information..</li> <li>★ Nor can you select Basic Theory Course set by this department, nor select the courses this department not allowed in the sheet of the general courses each department not allowed.</li> <li>★ Please refer to “<u>Guideline for Students Taking Physical Education Courses at National Chung Cheng University</u>” for relevant information.</li> </ul>							
◎Note: <u>Social Service Learning</u> courses are required graduation. (no credit)								
(2) Major compulsory courses for major in biomedical sciences: <b>60 credits</b>								
<b>Calculus</b> (3 credits)	3							
Conceptual Physics (I)(II) (4 credits)	2	2						
General Chemistry (3 credits)	3							
General Chemistry Laboratory(1 credit)	1							
Biology(I)(II)(6 credits)	3	3						
Experiments on Biology (I)(II) (2 credits)	1	1						
Organic Chemistry(I)(II) (6 credits)		3	3					
<b>Linear Algebra</b> (3 credits)		3						
Analytical Biochemistry(3 credits)				3				
Biochemistry (I)(II)(6 credits)			3	3				
Experiments on Life Sciences (I)(II)(III) (3 credits)			1	1	1			
Molecular Biology (4 credits)				4				
Medical Virology (2 credits)					2			
Genetics (3 credits)					3			
Medical Microbiology (2 credits)					2			
Cell Biology (4 credits)						4		
Immunology (3 credits)						3		
Seminars(I)(II)(2 credits)							1	1

(3) Major elective courses for major in biomedical sciences: **22 credits**

1. Professional elective subjects should be at least 22 credits, including two programs (Table A, B), and other core courses (Table C), in which at least 12 credits are from either Genome and Proteomics program, or Molecule and Cell biology program.
2. Students who finish at least 15 credits from any of the two programs (Table A, B) get have certificate of course completion after verification by the department.

Table A. Genomics and Proteomics Program

Proteomic Research 2 credits	Introduction to Bioinformatics 3 credits	Biophysical Chemistry 3 credits
Genomics Techniques and its Biomedical Application 3 credits	Introduction to Systems Biology 3 credits	Structural Biology 2 credits
The Principle and Applications of Genome Editing 2 credits	Epigenomics 3 credits	Experimental Design in Molecular Biology 2 credits
Gene editing and synthetic biology 3 credits	RNA Transcriptome 3 credits	<b>Introduction to Biostatistics 3 credits</b>

Table B. Molecule and Cell biology Program

Stem Cell Biology 3 credits	Molecular Oncology 3 credits	Histology 2 credits
Exploring Neuroscience 2 credits	Signal Transduction 2 credits	Cancer Biology 3 credits
Introductory Pharmacology 2 credits	Developmental Biology 3 credits	Human Anatomy 2 credits
Biomedical Research with Model Organisms 2 credits	Clinical Molecular Oncology 2 credits	<b>Cellular Mechanisms of Human Diseases 2 credits</b>

Table C. Other Core Courses

Biology Morphogenesis 2 credits	Human Physiology 3 credits	Protein Biotechnology 2 credits
Critical Reading and Writing Scientific Papers 2 credits	Introduction for Biomedical Sciences Reading (1) 1 credit	Introduction for Biomedical Sciences Reading(II) <b>2 credits</b>
Introduction to Computers 3 credits	Analytical Chemistry 3 credits	Introduction to Tissue Engineering 3 credits
Environmental Microbiology 3 credits	Environmental Chemistry 2 credits	Biomedical Materials 3 credits
<b>Material Science 3 credits</b>	Introduction to Clinical Oncology and Medical Technology 2 credits	Application of Biomedical Science 2 credits
<b>Biostatistics and data analysis using SAS with Enterprise Guide (EG) 3 credits</b>	<b>Cancer Gene Therapy 2 credits</b>	<b>Introduction to Clinical Molecular Diagnosis 2 credits</b>
<b>Entrepreneurship team innovation and industrial application 3 credits</b>	<b>Nanomedicine 2 credits</b>	

(4) Unrestricted selective courses: **18 credits**

1. These courses can be taken from the specialized courses of the Biomedical Science department and other departments. However, the "Biology" and "Biochemistry" courses offered by other departments will not be included in this department's free elective credits and graduation credits.
2. Overloaded general education courses are not allowed to count into the unrestricted elective and graduation credit in this department.
3. The elective credit of military training (or nursing) course is not allowed to count into unrestricted elective and graduation credit.
4. Student who fails to finish education program (i.e., drop the course) or takes excessive education courses, is unable to count into unrestricted elective and graduation credit.
5. Student who selects Basic English course offered by Language center, is unable to count into unrestricted selective credit in this department and graduation credit. Only the Advanced courses (medium or advanced level English class) can be counted for unrestricted elective credit of the department.
6. Student who selects P.E course credit is unable to count unto unrestricted elective and graduation credit.