

長庚大學生物醫學研究所碩士班必選修科目表（一一〇學年度入學學生適用） 110.11 修訂

Graduate Program Master Curriculum (2021~2022)

一、畢業學分數需達 24 學分(不含論文 6 學分)

組別	生化細胞分生組	微生物學組	生理暨藥理學組
必修	11	8	10
選修	13	16	14

本所認可生物醫學研究所博士班、臨床醫學研究所臨床醫學組碩、博士班及中醫學系天然藥物碩士班、醫學生物技術暨檢驗學系碩士班**新興病毒暨分子醫學國際碩士學位課程**，皆可列為選修學分。

二、碩士”論文”學分(6)於通過學位考試並繳交通過審核論文後給予。

三、畢業要求資訊請見當年度學生手冊

領域／組別 Divisions	必修 Required (R) or 選修 Elective (E)	科目名稱 Course Title	學分 Credit	開課 年級 Year	上學 期 Fall	下學 期 Spring	備註 Note
共同必修 General Required Courses	R	書報討論 Seminar	4	1~2	2		一～二年級必修四學分(1 學分/學期)，修滿二學分且提前通過學位考試者、學碩學程生修滿兩學分者得免修，仍需補足畢業學分。
生化暨細胞分生 學組 Division of Biochemistry and Cellular Molecular Biology	R	高等生化學 Advanced biochemistry	3	1	3		自 108 學年度開始，本二課程為二選一必修。碩博合開
	R	細胞生物學 Cell biology	3	1	3		Starting in 2019, students may take only one as the required courses. Offered jointly by GIBMS Ph.D and Master Programs.
	R	分子生物學 Molecular biology	4	1		4	碩博合開 Offered jointly by GIBMS Ph.D and Master Programs.
微生物學組 Division of Microbiology	R	微生物學-細菌學 Microbiology-bacteriology	2	1	2		由左列四門科目中任選兩門計四學分作為必修學分。Take any two courses (4 credits) as required courses
	R	微生物學-寄生蟲學 Microbiology-parasitology	2	1	2		
	R	微生物學-病毒學 Microbiology-virology	2	1		2	碩博合開 Offered jointly by GIBMS Ph.D and Master Programs.
	R	免疫學 Immunology	2	1		2	
生理暨藥理學組 Division of Physiology and Pharmacology	R	細胞生理暨分子藥理學 Cellular physiology and molecular pharmacology	6	1	6		擬於碩士在學期間修習本校博士班「藥理學(4 學分)」與「生理學(4 學分)」者可免修本課程；醫學系學碩學程生得免修，且需補足畢業學分數。If students take medical pharmacology (4 credits) or medical physiology (4 credits), they can substitute this required course, but need to fulfill total graduation credit units
選修	生化暨細胞 分生學組 Division of Biochemistry and Cellular Molecular Biology	E 腫瘤生物學及癌症治療 Cancer Biology and Cancer Therapy	2	1	2		與生醫系合開
		E 表觀遺傳學 Epigenetics : Chromatin and gene regulation	2	1	2		與生醫系合開
		E 分子細胞生物學特論 Special topics in molecular and cellular biology	2	1		2	與生醫系合開
		E 果蠅模型應用於人類疾病研究特論 Drosophila model and human diseases	2	1		2	與生醫系合開
		E 幹細胞生物學 Stem cell biology	2	1		2	與生技所合開
		E 先進蛋白質生物標誌偵測量技術 Advanced technologies for biomarker detection and quantification	1	1	1		暑期開課,上限 25 人，與生醫系合開 summer course, class limit: up to 25 students
	微生物學組 Division of Microbiology	E 應用免疫技術 Immunological techniques	1	1	1		與生技所合開
		E 應用免疫技術實驗 Immunological techniques laboratory	1	1	1		與生技所合開
		E 生物資料庫管理及應用 Biological database management and applications	3	1		3	與生醫系(大四)合開

	生理暨藥理學組 Division of Physiology and Pharmacology	E	奈米生物技術之醫學應用 Applications of nanobiotechnology in medicine	2	1	2	與生技系碩士班、生物科技產業碩士學程、化材系碩士班及醫工所碩士班合開
		E	老化研究特論 Special topics in aging research	1	1	1	(自 104-1 學年度開始)
		E	粒線體與細胞凋亡之病生理特論 Special topics in pathophysiology of mitochondria and apoptosis	2	1	2	
		E	螢光顯微影像之生物應用 Biomedical applications of fluorescence imaging microscopy	2	1	2	暑期上課 summer course
		E	螢光顯微影像之生物應用實作 Biomedical application of fluorescence imaging microscopy	1	1	1	暑期上課 summer course
	其他 Others	E	現代生物技術及分子診斷實驗 The frontier of biotechnology in molecular diagnosis laboratory	2	1	2	暑期開課,上限 35 人 summer course, class limit: up to 35 students
		E	尖端生物技術實驗-分子細胞學 Advanced biotechnology laboratory-molecular cell biology	2	1	2	暑期開課,上限 35 人 summer course, class limit: up to 35 students

- 註： 1、碩博合開課程僅供研究所學生及學博、學碩一貫生修習。
2、可選擇「分子醫學全英語碩士學位學程」之書報討論課程作為必修。
3、學生所選欲修習之科目，需經過指導老師之同意及簽名。
4、專題討論為每組自行設定主題課程。

所長： 黃如玲 課程委員會召集人： 張國清

Graduate Institute of Biomedical Sciences, Chang Gung University

Graduate Program Master Curriculum (2021~2022)

1. Students pursuing a Master degree must fulfill a minimum 24 credits in course work and 6 credits for the Master thesis.
2. Students may choose any courses listed below.
3. The 6 credits for the “Master Dissertation” are given **after passing the final defense and submitting the approved dissertation.**
4. The student’s guideline of the year has graduation requirements.

General Required Courses	Course Title	Credit	Year	Semester		Note
				Fall	Spring	
Required	Seminar	4	1~2	1	1	Students must take all 4 semesters.
Elective Courses	Special Topics in Biochemistry, Cell & Molecular biology (1) (*)	2	1	2		
	Biological and Biomedical English Paper Writing Style (*)	2	1	2		
	Biochemistry and Molecular Biology(*)	2	1	2		
	Microbiology-Bacteriology (*)	2	1	2		
	Advanced Immunology (*)	3	1	3		
	Bioinformatics & Biostatistics (*)	2	1	2		
	Writing theses and research proposals(*)	2	1	2		
	Human physiology(*)	4	1	4		
	Cellular Physiology & Signal Transduction (*)	2	1	2		
	Advanced Technologies in Systems Biology (*)	3	1	3		
	Molecular Imaging (*)	3	1	3		Offered bi-annually, starting in 2007
	Vaccine Development (*)	3	1	3		offered bi-annually, starting in 2009
	Special Topics in Emerging Viruses (*)	2	1	2		
	Special Topics in RNA Viruses (*)	2	1	2		
	Free Radical Biology and Medicine (*)	2	1	2		
	Translational Cancer Medicine (*)	2	1	2		Offered jointly with the MS program. Prerequisite: Cell Biology or Molecular Biology
	Animal Model for Studying Emerging Infectious Diseases(*)	2	1	2		
	Genomic Data Science (*)	2	1	2		
	Deep Learning with Python (*)	2	1	2		
	Molecular & Cellular Biology (*)	2	1	2		
	Recent advances in Biotechnology Applied in human Diseases (*)	2	1	2		
	Special Topics in Membrane Trafficking and Exocytosis(*)	2	1		2	
	Advanced Cell Biology (*)	2	1		2	
	Cell Growth and Apoptosis (*)	2	1		2	
	Special Topics in Biochemistry, Cell & Molecular biology (2) (*)	2	1		2	
	Advances in Microbiology (*)	2	1		2	
	Advances in Immunology (*)	2	1		2	
	Medicinal pharmacology(*)	4	1		4	
	Scientific Integrity and Scientific Writing (*)	2	1		2	Offered bi-annually, starting in 2018
	Advanced Bacteriology (*)	2	1		2	
	Technologies and Advances in Emerging Viral Infections (*)	2	1		2	

	Methodology of Molecular Virology (*)	2	1		2	
	Anti-virus Drug Development (*)	2	1		2	
	Advanced Clinical Virology (*)	2	1		2	
	Test Reagent Kit Development (*)	2	1		2	
	Personalized Precision Medicine (*)	2	1		2	

Note: Subjects chosen by students must be approved and signed by the Thesis supervisor.

Director of GIBMS: 郭红玲 2018 Head of the Course Committee: Stuart Owen