

# 分子生物暨人類遺傳學系學士班課程地圖

112-1學期(112/10/23)分遺系課規會議修訂通過

教育目標	必修/選修	一上	一下	二上	二下	三上	三下	四上	四下	核心能力	未來發展	
培養具備分子生物暨人類遺傳基礎知識及實驗操作能力之人才	必修課程	普通生物學3	生物統計2	生物化學(一)3	生物化學(二)3	書報導讀1	人類遺傳學概論(二)2			具備分子生物暨人類遺傳基礎知識的能力	<b>升學</b> 國內、外生醫類碩士班	
		普通化學3	有機化學3	分子生物學3	細胞生物學3	人類遺傳學概論(一)2	癌症生物學導論2					
		分子醫學與人類遺傳學科技新知1	遺傳學3			訊息傳遞概論2	幹細胞學2					
						發育生物學3	基因體與蛋白質體學3					
		生物學實驗1	化學實驗1	分子遺傳學原理與技術3	生物化學實驗1	專題研究(三)2						具備分子生物暨人類遺傳實驗操作的能力
		分子生物學的歷史2			生物科技3		專題討論(一)2	專題討論(二)2				具備邏輯思考、分析事理及溝通表達的能力
		生物科技及精準醫學群選修課程		遺傳學技術含實驗2			實務操作生物標記之偵測與分析2	小鼠實驗模式概論2 (單數學年下學期開設)			具備分子生物暨人類遺傳實驗操作的能力	<b>就業</b> • 生技研發人員 • 生技管理人員 • 生技產品專員 • 臨床研究人員 • 學術研究人員 • 醫療院所專業人員 • 國高中生物科教師 • 公務人員
						細胞培養技術2	次世代基因體技術原理分析與產業2					
							奈米醫學原理與實務1					
				應用生物資訊學3			細胞週期概論2 (單數學年開設)			具備分子生物暨人類遺傳基礎知識的能力		
								產業實習1		具備邏輯思考、分析事理及溝通表達的能力		
		選修課程	微積分2	普及科學特論2	研究基礎概念與倫理2	老化醫學概論2	免疫學2			演化學2 (每學年下學期開設)	具備分子生物暨人類遺傳基礎知識的能力	
	普及科學導讀2		實驗室導航2 (雙數學年下學期開設)	基礎微生物學2								
	分子生物暨人類遺傳學生涯規劃1			分子人類學2								
				專題研究(一)2	專題研究(二)2		專題研究(四)2	專題研究(五)2	專題研究(六)2	具備分子生物暨人類遺傳實驗操作的能力		

## The Course Map for the Department of Molecular Biology and Human Genetics (Bachelor Program)

Educational Aim	Required / Elective	Freshman		Sophomore		Junior		Senior		Core Competency	Prospect	
		1 <sup>st</sup> semester	2 <sup>nd</sup> semester	1 <sup>st</sup> semester	2 <sup>nd</sup> semester	1 <sup>st</sup> semester	2 <sup>nd</sup> semester	1 <sup>st</sup> semester	2 <sup>nd</sup> semester			
To train the students to have the knowledge and experimental skills in molecular biology and human genetics	Required course  (Course title/Credits)	General Biology 3	Biostatistics 2	Biochemistry ( I ) 3	Biochemistry (II) 3	Studies on scientific literature 1	Introduction to Human Genetics (II) 2			Capable of knowledge in molecular biology and human genetics	<ul style="list-style-type: none"> <li>• Continue to advanced graduated study either here or abroad.</li> <li>Job market prospects : <ul style="list-style-type: none"> <li>• Biotech R&amp;D</li> <li>• Biotech management</li> <li>• Biotech QC</li> <li>• Clinical research staff</li> <li>• Academic research staff</li> <li>• Working in health related profession</li> <li>• High school biology teacher</li> <li>• Civil servant</li> </ul> </li> </ul>	
		General Chemistry 3	Organic Chemistry 3	Molecular Biology 3	Cell Biology 3	Introduction to Human Genetics ( I ) 2	Introduction to Cancer Biology 2					
		The stories behind the technological advances in molecular medicine and human genetics 1	Genetics 3			Introduction to Signal Transduction 2	Stem Cell 2					
						Developmental Biology 3	Genomics and Proteomics 3					
		Biology Lab 1	Chemistry Lab 1	Principle and Technology of Molecular Biology and Human Genetics 3	Biochemistry Lab 1	Study on Special Topic (III) 2				Able to carrying out experiment in molecular biology and human genetics		
		History of Molecular Biology 2			Biotechnology 3		Seminar ( I ) 2	Seminar (II) 2		Posses analyze in expression, critical assessment and communication		
	Program in biotechnology and precision medicine (elective)  (Course title/Credits)			Genetics Laboratory Technique 2			Practical detection and analysis of biomarkers 2	Introduction of using mouse as experimental model 2 (Odd school year)				Able to carrying out experiment in molecular biology and human genetics
							Cell Culture Technology 2	Next-Generation Sequencing: Principle, Analysis and Industrial Application 2				
								Principles and practices for Nanomedicine 1				
					Practical bioinformatics 3			Introduction to cell cycle 2 (Odd school year)				Capable of knowledge in molecular biology and human genetics
									Industry Internship 1			Posses analyze in expression, critical assessment and communication
	Elective course  (Course title/Credits)	Calculus 2	Specific topics on popular science 2	Concepts and Ethics in Research 2	Overview of Geriatric Medicine 2	Immunology 2			Evolution 2	Capable of knowledge in molecular biology and human genetics		
		Guided reading on popular science 2	Lab Navigation 2 (Even school year)	Foundation in Microbiology 2								
		Career Development of Molecular Biology and Human Genetics 1		Molecular Anthropology 2								
				Study of Special Topics ( I ) 2	Study of Special Topics (II) 2			Study on Special Topic (IV) 2	Study on Special Topic (V)2	Study on Special Topic (VI) 2		Able to carrying out experiment in molecular biology and human genetics