

長庚大學 電子工程學系碩士班 必選修科目表 (113學年度入學學生適用)

Curriculum of the master's program of Dept. Electronic Engineering, Chang Gung University (applicable to students admitted in 2024)

領域／組別 Field/Group	必選修 Compulsory / Elective	科目名稱Course Title	學分 Credit	開課 年級 Grade	上學期 Semester I	下學期 Semester II	領域／組別 Field/Group	必選修 Compulsory / Elective	科目名稱Course Title	學分 Credit	開課 年級 Grade	上學期 Semester I	下學期 Semester II
共同 Common	必修 Compulsory	學報討論(Seminar)	2	—	1	1	共同 Common	必修 Compulsory	撰寫論文(Scientific Writing)	0		0	0
共同 Common	必修 Compulsory	專題研究(Project)	2	—	1	1	共同 Common	必修 Compulsory	論文(Scientific)	6			
共同 Common	必修 Compulsory	學報討論(Seminar)	2	二	1	1							
院共構課程 College co-constructed courses	選修 Elective	科技英文寫作(1)(2)(English Technical Writing)	2	—	1	1	院共構課程 College co-constructed courses	選修 Elective	英文口說與報告(1)(2)	2	—	2	2
共同 Common	選修 Elective	企業實習((1)(2)(Industry Training(1)(2))	12	二	6	6	共同 Common	選修 Elective	醫療電子臨床導入(Clinical Application of Medical Electronic Device)	3	—		3
甲組 Group A	選修 Elective	光電實驗(Electro-Optical Laboratory)	2	—	1	1	乙組 Group B	選修 Elective	被動微波電路(Passive Microwave Circuit Design)	3	—	3	
甲組 Group A	選修 Elective	半導體元件及物理 (Semiconductor Devices and Physics)	3	—	3		乙組 Group B	選修 Elective	超大型積體電路設計(VLSI Design)	3	—	3	
甲組 Group A	選修 Elective	量子力學(Quantum Mechanics)	3	—	3		乙組 Group B	選修 Elective	混合模式S參數網路分析 (Mixed Mode S-parameter Circuit Analysis)	3	—	3	
甲組 Group A	選修 Elective	半導體實驗(Semiconductor Experiments)	1	—	1		乙組 Group B	選修 Elective	天線(Antennas)	3	—	3	
甲組 Group A	選修 Elective	積體電路專論(Special Topic on VLSI Engineering)	3	—	3		乙組 Group B	選修 Elective	高頻量測(High-Frequency Measurement)	3	—	3	
甲組 Group A	選修 Elective	半導體製程及元件模擬 (Semiconductor Device Design & Simulation)	3	—	3		乙組 Group B	選修 Elective	混合訊號積體電路設計 (Mixed-Signal IC Design)	3	—		3
甲組 Group A	選修 Elective	基礎光學(Basic Optics)	3	—	3		乙組 Group B	選修 Elective	生醫電子學(Biomedical Electronics)	3	—		3
甲組 Group A	選修 Elective	微機電實驗(MEMS micro fabrication Lab.)	1	—	1		乙組 Group B	選修 Elective	主動微波電路設計(Active Microwave Circuit Design)	3	—		3
甲組 Group A	選修 Elective	生醫電子微流體系統 (Biomedical Electronic Microfluidic System)	3	—	3		乙組 Group B	選修 Elective	高等超大型積體電路設計 (Advanced VLSI Design)	3	—		3
甲組 Group A	選修 Elective	薄膜工程(Thin Film Technology)	3	—	3		乙組 Group B	選修 Elective	高速電路板設計(High Speed PCB Design)	3	—		3
甲組 Group A	選修 Elective	材料研究方法(Methods for Material Research)	3	—	3		乙組 Group B	選修 Elective	電磁理論(Electromagnetic Theories)	3	—		3
甲組 Group A	選修 Elective	物理光學(Physical Optics)	3	—	3		乙組 Group B	選修 Elective	高等類比積體電路設計 (Advanced Analog IC Design)	3	—		3
甲組 Group A	選修 Elective	先進記憶體元件(Advanced Memory Devices)	3	—	3		乙組 Group B	選修 Elective	超大型積體電路測試設計 (VLSI Testing and Testable)	3	—		3
甲組 Group A	選修 Elective	半導體量測(Semiconductor Measurement)	3	—	3		乙組 Group B	選修 Elective	高等數位訊號處理(Advanced Digital Signal Processing)	3	—		3
甲組 Group A	選修 Elective	奈米材料與元件 (Nanostructured and	3	—	3		乙組 Group B	選修 Elective	微波濾波器設計(Microwave Filter Design)	3	—		3
甲組 Group A	選修 Elective	固態物理(Solid State Physics)	3	—	3		乙組 Group B	選修 Elective	數位通信積體電路設計 (Digital Communication Integrated Circuit Design)	3	—		3
甲組 Group A	選修 Elective	元件量測與可靠性(Devices Measurement and Reliability)	3	—	3		乙組 Group B	選修 Elective	數位積體電路設計(Digital Integrated Circuit Design)	3	—		3
甲組 Group A	選修 Elective	光電元件與系統之電性可靠 度(Electrical reliability of opto- electronic components and systems)	3	—	3		乙組 Group B	選修 Elective	超大型積體電路I信號處理設 計(VLSI Digital Signal Processing Design)	3	二	3	
甲組 Group A	選修 Elective	高等電子材料學(Advanced Electronic Materials)	3	—		3	乙組 Group B	選修 Elective	類比積體電路設計(Analog Integrated Circuit Design)	3	二	3	
甲組 Group A	選修 Elective	非揮發性記憶體元件與製程 (Nonvolatile Memories and Their Fabrication Technologies)	3	—		3	乙組 Group B	選修 Elective	微波積體電路設計(Microwave Integrated Circuit Design)	3	二	3	
甲組 Group A	選修 Elective	半導體雷射(Semiconductor Laser)	3	—		3	乙組 Group B	選修 Elective	嵌入式系統 (Embedded System)	3	二		3
甲組 Group A	選修 Elective	雷射物理(Laser Physics)	3	—		3							
甲組 Group A	選修 Elective	場效半導體電子元件(Field- Effect Semiconductor Devices)	3	—		3							
甲組 Group A	選修 Elective	半導體光學(Semiconductor Optics)	3	—		3							
甲組 Group A	選修 Elective	材料分析(Material Analysis)	3	—		3							
甲組 Group A	選修 Elective	微機電元件與系統 (Microelectromechanical Device and System)	3	—		3							

甲組 Group A	選修 Elective	先進積體電路技術(Advanced Integrated Circuit Technology)	3	—	3								
甲組 Group A	選修 Elective	固態感測元件(Solid-State Sensors)	3	—	3								
甲組 Group A	選修 Elective	積體電路技術可靠性工程(Reliability Engineering of Integrated Circuit Technology)	3	—	3								
甲組 Group A	選修 Elective	液晶顯示器薄膜製程技術(Liquid-Crystal Displays Thin Film Process Technology)	3	—	3								
甲組 Group A	選修 Elective	先進高介電層材料及應用(Advanced High-K Material and Application)	3	—	3								
甲組 Group A	選修 Elective	基礎群論(Basic Group Theory)	3	—	3								
甲組 Group A	選修 Elective	固態電子學(Solid State Electronics)	3	—	3								
甲組 Group A	選修 Elective	微電子構裝技術(Microelectronics Packaging Technology)	3	—	3								
甲組 Group A	選修 Elective	光電半導體元件(Optoelectronic Semiconductor)	3	—	3								
甲組 Group A	選修 Elective	半導體製造科技(Semiconductor Manufacturing Technology)	3	—	3								
甲組 Group A	選修 Elective	半導體元件製造與發展實務(Semiconductor Device Fabrication and Development Practice)	3	—	3								
甲組 Group A	選修 Elective	半導體元件物理及特性(Physics and Characterization of Semiconductor Devices)	3	—	3								
甲組 Group A	選修 Elective	專案實習(Internship to Industry Related Project)	4	—	4								
甲組 Group A	選修 Elective	化合物半導體(Compound Semiconductor)	3	二	3								
甲組 Group A	選修 Elective	先進半導體元件(Advanced Semiconductor Device)	3	二	3								
甲組 Group A	選修 Elective	積體電路製程實務(Advanced Topics in VLSI Processing)	3	二	3								
甲組 Group A	選修 Elective	半導體元件製程與實務(Semiconductor device process and practices)	3	二	3								
甲組 Group A	選修 Elective	半導體記憶元件導論(Introduction to semiconductor memory devices)	3	二	3								

備註
Remark

一、畢業學分36學分(含必修6學分、選修24、論文6學分)。1. Graduation credits: 36 credits (including 6 credits of compulsory courses, 24 credits of elective courses, and 6 credits of master's thesis).

(1)必修6學分(含學報討論4學分、專題研究2學分)(1) 6 credits of compulsory courses (including 4 credits of "Seminar" and 2 credits of "Project")

(2)選修24學分(選修他系研究所課程至多承認6學分)。(2) 24 credits of elective courses. A maximum of 6 credits can be admitted for elective graduate courses of other departments.

(3)論文6學分(通過學位考試並繳交通過審核論文後給予)(3) 6 credits for thesis (given after passing the degree examination and submitting the approved thesis)

二、須達英文畢業門檻方可畢業：請詳見長庚大學工學院碩士班研究生英文能力檢測實施方案。2. Students must pass the English proficiency test before you can graduate: please refer to the regulation of the English proficiency test for graduate students of the College of Engineering.

三、必修學分6學分：3. Compulsory credits: 6 credits:

1. 一年級「學報討論」每學期均必修1個學分，共2學分。1. The first-year "Seminar" is required to take 1 credit each semester, a total of 2 credits.

2. 二年級每學期均必須參加「學報討論」且及格，但提早畢業及已辦抵免者可不受此限。2. Second-year students must participate in the "Seminar" every semester and pass, but those who graduate early and have already applied for credit are not subject to this restriction.

四、選修學分24學分：甲組為奈米元件及製程、乙組為電子電路設計。4. Elective credits: 24 credits: Group A is nano-components and manufacturing process, and Group B is electronic circuit design.

1. 甲組學生應修通過甲組課程或共同選修課程至少18學分(含)，乙組學生應修通過乙組課程或共同選修課程至少18學分(含)，若為外籍生管道入學或雙聯學位者，選修課程可不分組別。1. Students in Group A should take at least 18 credits (inclusive) of Group A courses or common elective courses, and at least 18 credits (inclusive) of Group B students should pass Group B courses or common elective courses. **Admission for International Students or dual degree program**, elective courses may not be divided into groups.

2. 「企業實習(1)、(2)」，最多承認為系定選修學分6學分 2. "Industry Training (1) and (2)", a maximum of 6 credits can be recognized as elective credits.

3. 學院共構選修課程列入他系選修。3. The co-constructed elective courses of the College of Engineering can be included in the elective courses of other departments.

4. 全英文課程之選修課程如附表得認定為畢業學分。The elective courses for full English courses as shown in the attached table can be recognized as graduation credits.

五、學生畢業前必須選修基礎課程與核心課程。5. Students must take basic courses and core courses before graduation.

1. 甲組基礎課程：半導體元件及物理。1. Group A basic courses: Semiconductor Devices and Physics

2. 乙組基礎課程：超大型積體電路設計、被動微波電路，經指導教授同意選定一門。2. Group B basic courses: VLSI Design, Passive Microwave Circuit Design, one selected with the consent of the supervisor.

3. 各組其他選修課程經指導教授同意選定兩門為核心課程。3. Two other elective courses of each group are selected as core courses with the consent of the supervisor.

六、修習「記憶體專業學程」課程並完成指定學分者，得認列為本系碩士班畢業學分。學生仍須修滿本系碩士班必修課程及論文(或技術報告替代論文)，以符合本系碩士班畢業之要求。6. Those who have completed the "Memory Program" course and completed the designated credits can be recognized as graduation credits for the master's program. Students still have to complete the required courses and thesis (or technical report substitute thesis) to meet the graduation requirements of the master's program.

七、修習「記憶體專業學程」之「企業實習(1)(2)」，可替代本系碩士班「學報討論」，至多承認2學分。7. Taking "(Industry Training (1) (2))" of the "Memory Program" can replace the "Seminar" of the master's program, and a maximum of 2 credits can be admitted.

主管簽名：

✓ 張新 4/17

2023.11.02

Curriculum of the master's program of Dept. Electronic Engineering, Chang Gung University

The elective courses for full English courses (applicable to students admitted in 2024)

Semester	Course Code	Course Title	Credits	Hours
1	END014	Compound Semiconductor	3	3
1	END017	Semiconductor Devices and Physics	3	3
1	END053	Advanced Memory Devices	3	3
1	ENM222	Nanostructured and Nanotechnology	3	3
1	NDM026	VLSI Forensics	3	3
1	NDM024	Computing Electronics Design	3	3
2	END003	Process and Device Simulation for Semiconductor Technology	3	3
2	END026	Solid State Electronics	3	3
2	END031	Field-Effect Semiconductor Devices	3	3
2	END044	Reliability Engineering of Integrated Circuit Technology	3	3
2	END058	Advanced High-K Dielectrics and its Applications	3	3
2	END072	Optoelectronic Semiconductor Devices	3	3
2	END074	Solid-State Sensors	3	3
2	END078	VLSI Testing and Testable Design	3	3
2	ENM420	Biomedical Electronics	3	3
2	ITD108	Advanced Computer Architecture	3	3
2	EED097	Advanced Error Control Coding and Applications	3	3
2	NDM005	VLSI Modelling & Design	3	3
2	NDM028	RF Systems Design	3	3
2	NDM030	Mixed Signal Systems by Design	3	3