

電子工程系 博士班 114 學年度入學課程結構規劃表

2025 Curricula for the Ph.D. Program in Department of Electronic Engineering (Jiangong Campus)

課程類別 Course Category			一年級 1 st Academic Year						二年級 2 nd Academic Year						三年級 3 nd Academic Year						
			第一學期			第二學期			第一學期			第二學期			第一學期			第二學期			
			Semester 1			Semester 2			Semester 1			Semester 2			Semester 1			Semester 2			
課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours
學院共同課程 (由學院開課) College Common Courses	選修 Elective	應修課程數/ 應修學分數 Credits Needed	課程名稱/學分數/時數 Course Name/Credits/Hours																		
			課程名稱/學分數/時數 Course Name/Credits/Hours																		
學院跨領域課程 (由學院開課) College Interdisciplinary Courses	選修 Elective	應修課程數/ 應修學分數 Credits Needed	課程名稱/學分數/時數 Course Name/Credits/Hours																		
專業課程 Professional Courses	必修 Required	應修學分數 14 學分 14 Credits Needed	專題研討〈一〉 Seminar (1)	2	2	專題研討〈二〉 Seminar (2)	2	2	專題研討〈三〉 Seminar (3)	2	2	專題研討〈四〉 Seminar (4)	2	2							
												論文 Thesis	6	6							
	選修 Required	應修學分數 18 學分 18 Credits Needed	固態電子學/3/3 Solid State Electronic/3/3 工程量子力學/3/3 Engineering Quantum Mechanics/3/3 物理/3/3 Physics/3/3 光電子學/3/3 Photonics/3/3 數值光子晶體/3/3 Numerical Photonic Crystal/3/3 光子超物質/3/3 Photonic Metamaterial 電子電路設計專論/3/3 Electronic Circuit Design Monograph/3/3 電子儀器專論/3/3	電子元件原理/3/3 Principle of Electronic Devices/3/3 半導體元件製程/3/3 Fabrication of Semiconductor Devices/3/3 類比濾波器設計/3/3 Analog Filer Design/3/3 深次微米 MOS 元件理論/3/3 Deep Sub Micro MOS Devices/3/3 數位通訊/3/3 Digital Communications/3/3 數位濾波器/3/3 Digital Filter/3/3 小型天線設計/3/3 Small Antenna Design/3/3 無線通訊電路/3/3 Wireless Communication Circuit/3/3 數值光波導/3/3	半導體量測技術/3/3 Semi-conductor Measuring Technique/3/3 材料科學/3/3 Foundations of Materials Science and Engineering/3/3 固態物理/3/3 Solid State Physics/3/3 高速元件/3/3 Height-Speed Devices/3/3 全光式元件/3/3 All Optical Devices/3/3 非線性表面電漿元件/3/3 Nonlinear Plasma Surface Element/3/3 適應性濾波器/3/3 Adaptive Wave Filters/3/3 高頻電路設計/3/3 Rf Circuit Design/3/3 權集演算法/3/3	電子控制器之設計/3/3 Design of Electronic Controller/3/3 光電元件/3/3 Optoelectronic Devices/3/3 非線性波導光學/3/3 Nonlinear Waveguide/3/3 左手物質/3/3 Left-Handed Material/3/3 展頻通訊/3/3 Spread Spectrum Communications/3/3 統計訊號處理/3/3 Statistic Signal Process/3/3 衛星通訊/3/3 Satellite Communications/3/3 進階生物計算/3/3															

課程類別 Course Category		一年級 1 st Academic Year						二年級 2 nd Academic Year						三年級 3 nd Academic Year					
		第一學期			第二學期			第一學期			第二學期			第一學期			第二學期		
		Semester 1			Semester 2			Semester 1			Semester 2			Semester 1			Semester 2		
		課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours
		Special Topic On Electronic Instrumentation/3/3 數位信號處理/3/3 Digital Signal Processing/3/3 通訊原理/3/3 Communication Theory/3/3 光纖通訊/3/3 Optical Fiber Communications/3/3 電磁理論/3/3 Electromagnetic Theory/3/3 正規語言/3/3 Formal Language/3/3 生物資訊學/3/3 Introduction To Computational Biology/3/3 網路程式設計進階/3/3 Advanced Network Programming/3/3 VLSI 電路測試/3/3 Vlsi Circuit Testing/3/3 演算法分析/3/3 Algorithms Analysis/3/3 圖形理論與演算法/3/3 Graph Theory and Algorithms/3/3 微帶天線設計/3/3 Microstrip Antenna Design/3/3 科技英文寫作/2/2 Technical English Writing/2/2 校外實習/3/3 Practice Outside the Campus/3/3			Numerical Analysis of Optical Waveguide/3/3 表面電漿子/3/3 Surface Plasmon/3/3 光學網路/3/3 Optical Network/3/3 創意電子商務設計/3/3 Creative Electronic Commerce Design/3/3 自然語言處理/3/3 Natural Language Processing/3/3 高等演算法/3/3 Advanced Algorithms Analysis/3/3 軟體工程/3/3 Software Engineering/3/3 固態感測器及電路設計導論/3/3 Introduction To Electronic Sensors and Signal Processing/3/3 進階科技英文寫作/2/2 Advanced Technology English Writing/2/2 醫用加速器專論/3/3 Monographs of Medical Accelerators/3/3 輻射度量與訊號處理/3/3 Radiation Measurement and Signal Processing/3/3 醫護資料處理專論/3/3 Health Care Data Processing Monographs/3/3 類神經網路設計與應用/3/3 Neural Networks Design and Applications/3/3 進階通訊專論/3/3 Advanced Introduction to Communication/3/3 基因工程概論/3/3 An Introduction to Genetic Engineering/3/3			Clustering Algorithms/3/3 高等人工智慧/3/3 Advanced Artificial Intelligence/3/3 生物統計學/3/3 Biostatistics/3/3 高等生物資訊演算法/3/3 Advanced Bioninformatics Algorithm/3/3 排隊理論/3/3 Queuing The/3/3 VLSI 信號處理/3/3 Vlsi Signal Processing/3/3 量子元件/3/3 Quantum Devices/3/3 醫學影像處理/3/3 Medical Image Processing/3/3 臨床工程特論(高醫合開課程) /3/3 On Special Clinical Engineering(Kaohsiung Medical University joint courses) /3/3 大數據應用/3/3 Big Data Applications/3/3 物聯網系統與應用/3/3 Networking Systems and Applications/3/3 進階資料結構/3/3 Advanced Data Structures/3/3 生物醫學工程/3/3 Bio Medical Engineering/3/3 醫學資料庫/3/3 Medical Library/3/3 醫用解剖學/3/3 Medical Anatomy/3/3 分子細胞生物學/3/3 Molecular Cell Biology/3/3 類神經網路應用/3/3 Neural Networks with Applications/3/3 生物識別專論/3/3 Special Topics On Biometrics/3/3 適應性訊號處理/3/3 Adaptive Signal Processing/3/3 計算機圖學/3/3			Advanced Bioninformatics Computing/3/3 物件導向資料庫/3/3 Object Oriented Database/3/3 醫用電子控制器之設計/3/3 Design of Medical Electronic Controller/3/3 醫學通訊專論/3/3 Medical Communication Monographs/3/3 臨床醫學概論/3/3 Introduction to Clinical Medicine/3/3 生物工程力學/3/3 Biological Engineering Mechanics/3/3 生物晶片/3/3 Biochips/3/3 雲端醫療概論/3/3 Drive Medical Introduction/3/3 實用生理學/3/3 Practical Physiology/3/3 機器學習/3/3 Machine learning/3/3 雲端計算與服務/3/3 Cloud Computing and Services/3/3 類神經網路/3/3 Neural Networks/3/3 高等演算法/3/3 Advanced Algorithms Analysis/3/3 機器深度學習/3/3 Machine-Based Deep Learning/3/3 小波轉換與應用/3/3 Wavelet Transform and Its Applications/3/3 智慧生活/3/3								

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		Semester 1			Semester 2			Semester 1			Semester 2			Semester 1			Semester 2		
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		醫用電子儀器專論/3/3 Monographs of Medical Electronic Instrumentation/3/3 醫用電子學/3/3 Medical Electronics/3/3 醫學物理與資訊/3/3 Medical Physics and Informatics/3/3 保健物理專論/3/3 Health Physics Monograph/3/3 高頻電路及訊號量測/3/3 High-Frequency Circuits and Signal Measurements/3/3 電子電路與系統/3/3 Electronic Circuit and Systems/3/3 模糊理論與應用/3/3 Fuzzy Theory and Applications/3/3 進階近代物理/3/3 Advanced Modern Physics/3/3 醫電專論/3/3 Topics on Bioelectronics and Bioinformatics/3/3 影像處理應用/3/3 Image Processing Applications/3/3 醫學新知/3/3 Medical news/3/3 醫學工程導論/3/3 Introduction to Medical Engineering/3/3 人工智慧/3/3 Artificial Intelligence/3/3 光電工程/3/3			醫用游離輻射/3/3 Medical Ionizing Radiation/3/3 生物統計學/3/3 Biostatistics/3/3 解剖及生理學導論/3/3 Introduction to Anatomy and Physiology/3/3 高等工程統計學/3/3 Higher Engineering Statistics/3/3 雷射工程/3/3 Laser Engineering/3/3 影像顯示技術/3/3 Display Technology/3/3 圖訊識別/3/3 Pattern Recognition/3/3 圖型辨識/3/3 Pattern Recognition/3/3 深度學習之電腦視覺應用/3/3 Deep Learning on Computer Vision Application/3/3 臨床工程特論/3/3 On Special Clinical Engineering/3/3 人工智慧應用系統/3/3 Artificial Intelligence Application System/3/3 新結構電子元件/3/3 New Structural Electronic Devices/3/3 石墨烯表面電漿/3/3 Graphene Plasmonics/3/3 啟發式最佳化方法/3/3 Heuristic Optimization Methods/3/3 微波工程/3/3 Microwave Engineering/3/3 微帶天線理論與設計/3/3 Design and Theory of Microstrip Antenna/3/3 平面天線設計實務/3/3 Design of Planar Antenna/3/3			Computer Graphics/3/3 資料探勘/3/3 Data Mining/3/3 高等資料庫/3/3 Advanced Database/3/3 數位影像處理/3/3 Digital Image Processing/3/3 射頻通訊電路設計/3/3 Design of RF Communication/3/3 微波電路設計/3/3 Microwave Circuit Design/3/3 演化式計算與應用/3/3 Evolutionary computation and application/3/3 機器學習數學/3/3 Mathematics for Machine learning/3/3 物聯網安全與隱私/3/3 IoT security and privacy paradigm/3/3			Smart Living/3/3 巨量資料分析/3/3 Big Data Analysis/3/3 智慧生醫感測技術/3/3 Smart biosensor technology/3/3 智慧生醫信號分析與影像分析/3/3 Bio-signal analysis/3/3 5G 數位通訊/3/3 5G Digital communications/3/3								

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		Semester 1			Semester 2			Semester 1			Semester 2			Semester 1			Semester 2		
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		Optoelectronic Engineering/3/3 元件物理/3/3 Physics of Semiconductor Devices/3/3 資訊理論/3/3 Information Theory/3/3 智慧型資訊安全系統/3/3 Intelligent Information Security System/3/3 醫學工程應用/3/3 Medical Engineering Application/3/3 系統離型與軟硬體整合設計/3/3 System Prototype and Integrated Hardware/Software Design/3/3 MATLAB 圖形使用者介面應用於生醫訊號分析/3/3 MATLAB Graphic User Interface for Biomedical Signal Analysis/3/3 教學實習微學分/1/1 Micro Credits Course for Teaching Practice/1/1 生技醫材設計與開發/3/3 Biomedical Devices Design and Development/3/3 3D 列印應用實作/3/3 3D Printing Application and Implementation/3/3 臨床工程實習/3/3 Clinical Engineering Intern/3/3 計算機圖學/3/3			高階醫用數學/3/3 advanced medical mathematics/3/3 智慧型機器人實務與應用/3/3 Intelligent Robot Application and Practice/3/3 智慧型計算與應用/3/3 Intelligent Calculation and Application/3/3 基因演算法/3/3 Genetic Algorithm/3/3 智慧系統設計/3/3 smart system design/3/3 人工智慧於臨床醫學照護實務/3/3 Artificial Intelligence In Clinical Application And Practice/3/3 機電整合/3/3 Mechatronics/3/3 醫療資料分析/3/3 medical data mining/3/3 智慧型視訊處理與應用/3/3 Intelligent Video Processing and Applications/3/3 低軌衛星系統/3/3 LEO satellite system/3/3 統計學習類神經網路/3/3 Statistical learning using neural network/3/3 奈米半導體元件製程/3/3 Manufacture of Nano semiconductor Devices/3/3 表面與界面分析/3/3 Surface and interface analysis/3/3 無線通訊專論/3/3 Special Topics on Wireless Communication/3/3 即時作業系統/3/3 Real-time Operating Systems/3/3 電腦視覺/3/3 Computer Vision/3/3														

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		第一學期			第二學期			第一學期			第二學期			第一學期			第二學期		
		Semester 1			Semester 2			Semester 1			Semester 2			Semester 1			Semester 2		
課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours
		Computer Graphics/3/3 雲端計算與服務/3/3 Cloud Computing and Services/3/3 影像和視訊處理/3/3 Image and Video Processing/3/3 智慧城市設計/3/3 Smart City Design/3/3 新材料 IC 元件/3/3 New Materials IC Devices/3/3 信息理論與編解碼/3/3 Coding and Information Theory/3/3 矽光子/3/3 Silicon Photonics/3/3 天線工程/3/3 Antenna Engineering/3/3 智慧計算/3/3 Intelligent Computation/3/3 大數據導論/3/3 Introduction to Big Data/3/3 智慧醫療系統/3/3 Smart Medical System/3/3 衛星通訊/3/3 Satellite Communications/3/3 精準醫學健康/3/3 Precision health and medicine/3/3 節能照明設計/3/3 Energy Conservation and Illumination Design/3/3 網路與排隊理論/3/3 Data Networks and Queueing Theory/3/3			多媒體安全/3/3 Multimedia Security/3/3 數據網路分析/3/3 Analysis of Data Networks/3/3 軟體品質管理/3/3 Software Quality Management/3/3 無線通訊系統/3/3 Wireless Communication Systems/3/3 類比積體電路設計與應用/3/3 Design and Application of Analog Integrated Circuits/3/3 資訊科技專題研討/2/2 Seminar on Information Technology/2/2 類比濾波電路 3/3 Analog Filter Circuits/3/3 類比積體電路符號分析/3/3 Symbolic Analysis in Analog Integrated Circuit/3/3 電力轉換器分析與產業應用/3/3 Power Converter Analysis and Industrial Applications/3/3 進階近代通訊系統/3/3 Advanced Modern Communication Systems/3/3 人工智慧與現代通訊技術/3/3 Artificial Intelligence and Modern Communication Technology/3/3 單級多埠轉換器設計與控制/3/3 Design and Control of Single-Stage Multiport Power Converters/3/3														

課程類別 Course Category		一年級 1 st Academic Year					二年級 2 nd Academic Year					三年級 3 nd Academic Year							
		第一學期			第二學期		第一學期			第二學期		第一學期		第二學期					
		Semester 1			Semester 2			Semester 1			Semester 2			Semester 1			Semester 2		
課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours	課程名稱 Course Name		學分數 Credits	時數 Hours
		光電實驗/3/3 Optoelectronics Experiments/3/3 高等光學/3/3 Advance Optics/3/3 高等信號處理專論/3/3 Advanced Signal Processing/3/3 多媒體系統專論/3/3 Special topics in multimedia systems/3/3 圖形識別/3/3 Pattern Recognition/3/3 物聯網科技服務創新/3/3 Service Innovation Based on Internet of Things/3/3 數位語音處理/3/3 Digital Speech Processing/3/3 高等計算機結構/3/3 Advanced Computer Architecture/3/3 先進電能轉換器設計與分析/3/3 Design and Analysis of Advanced Energy Converters/3/3 電子領域專題研討/2/2 Seminar on Electronics/2/2 高等類比積體電路/3/3 Advanced Analog Integrated Circuit/3/3 類比濾波器合成/3/3 Synthesys of Analog Filter/3/3 人工智慧於健康福祉應用/3/3																	

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		第一學期 Semester 1			第二學期 Semester 2			第一學期 Semester 1			第二學期 Semester 2			第一學期 Semester 1			第二學期 Semester 2		
		課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours
		Application of Artificial Intelligence in Health and Welfare/3/3 固態電子電路設計/3/3 Solid-state electronic circuit design/3/3 進階電能轉換器控制與優化/3/3 Advanced Energy Converter Control and Improvement/3/3 數位訊號處理晶片設計/3/3 DSP IC Design/3/3 進階神經網路/3/3 Advanced Neural Networks/3/3 6G 通訊系統/3/3 Communication System/3/3 線性類比電路分析與合成/3/3 Analysis and Synthesis of Linear Analog Circuit/3/3 電動船舶切換式電能轉換器/3/3 Switching Power Converters for Electric Ships/3/3 機器人學/3/3 Robotics/3/3																	

備註：

- 一、畢業總學分數為 32 學分。
- 二、必修 14 學分，選修 18 學分。
- 三、學生修讀所屬學院之「學院共同課程」應認列為本系專業課程學分；修讀所屬學院之「學院跨領域課程」或其他學院開課之

課程，則認列為外系課程學分。

四、系所訂定條件（學程、檢定、證照、承認外系學分及其他）：本系教師依據系所發展需求所增開之選修課程，且依規定呈報課程開課異動對照表者，亦得列入本組選修科目。

(一)「電子領域專題研討」課程及「資訊科技專題研討」課程，僅限 111 學年度(含)以前修畢「專題研討」課程之逕讀博士班學生修讀。

Notes:

1. Minimum credits required to graduate: 32 credits
2. Required courses: 14credits; elective courses: 18 credits
3. Credits earned by students from the common courses offered by their respective colleges shall be accepted as their affiliated departments' professional courses. However, credits earned from interdisciplinary courses offered either by their colleges or by other colleges will be accepted as credits earned from departments outside their own.
4. College requirements:
A. The “Seminar in the Field of Electronics” and “Seminar on Information Technology” are only available to pre-graduate students who have completed the “Seminar” course before the academic year 111 (inclusive).