國立彰化師範大學
資訊工程學系碩士班畢業條件表暨課程架構表
（114學年度入學學生適用）
National Changhua University of Education
Graduation Requirements and Course Structure for Master's Program of Computer Science and
Information Engineering
(Applicable for students in 114 academic year)

列印日期(Print Date:2025/08/19)

一.系必修課程
I.Department Required Courses

課程名稱 Course Name	學分/學時 Credit(s) / Hour(s)	年級 Grade	學期 Semester
書報討論 Seminar	1/2	1	1
書報討論 Seminar	1/2	1	2
進階書報討論 Advanced Seminar	1/2	2	1
論文 Thesis	0/0	2	1
論文指導(一) Thesis Supervision I	3/0	2	1
進階書報討論 Advanced Seminar	1/2	2	2
論文指導(二) Thesis Supervision II	3/0	2	2
專題研究（一）（至少2學分） Special Projcet(Ⅰ)(2 credits is least required)			
系統整合專題研究(一) Research on System Integration Ⅰ	2/2	1	1
軟體發展專題研究(一) Research on Software Development Ⅰ	2/2	1	1
網路通訊專題研究(一) Research on Network Communication Ⅰ	2/2	1	1
專題研究（二）（至少2學分） Special Projcet(Ⅱ)(2 credits is least required)			
系統整合專題研究(二) Research on System Integration Ⅱ	2/2	1	2
軟體發展專題研究(二) Research on Software Development Ⅱ	2/2	1	2
網路通訊專題研究(二) Research on Network Communication Ⅱ	2/2	1	2

二.系選修課程
II.Department Elective Courses

課程名稱 Course Name	學分/學時 Credit(s)/ Hour(s)
5G核心網路設計與實作 5G Core network Design and Practices	3/3
人工智慧	3/3

Artificial Intelligence	
分波多工網路 Wavelength Division Multiplexing Network	3/3
分散式系統 Distributed Systems	3/3
半導體元件物理 Physics of Semiconductor Devices	3/3
平行計算 Parallel Computing	3/3
生物資訊 Bioinformatics	3/3
行動計算 Mobile Computing	3/3
低功率積體電路設計 Low Power Integrated-Circuit Design	3/3
免執照頻段之無線通訊系統 Wireless Communication on Unlicensed Band	3/3
快速雛型系統設計 Fast Prototype System Design	3/3
車載通訊技術 Vehicular Communication Techniques	3/3
物件導向軟體工程 Object-Oriented Software Engineering	3/3
物聯網 Internet of Things	3/3
科技英文導讀與寫作 Reading and Writing of Technical Articles	3/3
計算機視覺 Computer Vision	3/3
計算機圖學 Computer Graphics	3/3
高科技專利取得與攻防 High Tech Patent Application and Protection	3/3
高效能計算 High Performance Computing	3/3
高等計算機結構 Advanced Computer Architecture	3/3
高等資料庫系統專題 Special Topics in Advanced Database	3/3
高等演算法 Advanced Algorithm	3/3
密碼學與資訊安全 Cryptography & Information Security	3/3
處理器設計與實作 Processor Design and Implementation	3/3
嵌入式系統 Embedded Systems	3/3
嵌入式系統程式設計 Embedded Systems Programming	3/3
無線區域網路 Wireless Local Area Network	3/3
無線區域與都會網路 Wireless Local and Metropolitan Area Network	3/3
無線通訊網路	3/3

Wireless Communication Networks	
超大型積體電路佈局設計 Layout Design of Very Large Integrated Circuit	3/3
超大型積體電路系統設計 VLSI System Design	3/3
超大型積體電路設計 VLSI Design	3/3
感知器原理及應用 Sensor Principles and Applications	3/3
資料探勘 Data Mining	3/3
資料壓縮進階 Advanced Data Compression	3/3
資訊檢索與探勘 Information Retrieval and Data Mining	3/3
電腦輔助積體電路設計 Computer-Aided Design of Integrated Circuits	3/3
網路通訊協定與效能分析 Performance evaluation of network protocols	3/3
網路模擬與測試 Network simulation and testing	3/3
網際網路協定 Internet Protocols	3/3
數位影像處理 Digital Image Processing	3/3
數位積體電路設計 Digital Integrated Circuit Design	3/3
類比積體電路設計 Analog Integrated Circuit Design	3/3
平行計算最佳化技術 Optimized Parallel Computing	3/3
次世代無線區域網路通訊協定 Next Generation Wireless Local Area Networks	3/3
計算智能 Computational Intelligence	3/3
計算機算術 Computer Arithmetic	3/3
專家系統 Expert Systems	3/3
強化學習 Reinforcement Learning	3/3
無線感測網路 Wireless Sensor Networks	3/3
視窗程式設計 Windows Programming	3/3
超大型積體電路設計技術 Design Techniques of VLSI	3/3
雲端系統 Cloud System	3/3
資料視覺化 Data Visualization	3/3
電腦動畫 Computer Animation	3/3
圖形理論	3/3

Graph theory	
網路安全 Network Security	3/3
數位電腦設計 Digital Computer Design	3/3
模糊邏輯 Fuzzy Logic	3/3
邊緣計算與智慧雲端系統 Edge computing and intelligent cloud systems	3/3
類神經網路 Neural Networks	3/3
混合訊號積體電路設計 Mixed-Signal Integrated Circuit Design	3/3
智慧物聯網實務 Practice of Intelligent Internet of Things	3/3

三.先修科目
Ⅲ.Prerequisite Courses

先修課程 Prerequisite Course	後修課程 Subsequent Course

四.畢業條件
Ⅳ.Graduation Requirements

一、本系(所)最低畢業學分為32學分，「論文指導(一)(二)」6學分及教育學分皆不計入畢業學分;凡註冊應至少修習一門科目(含論文)，否則應辦理休學。已修畢最低畢業學分而論文尚在撰寫中者，次學年起每學期必須選修「論文」。

二、凡選修本系碩士班開設科目一律採認為本系碩士班畢業學分;修習外系碩士班開設科目，至多採認6學分為本系(所)畢業學分，惟修習前須先申請核准方可選修。

三、系必修「書報討論」及「進階書報討論」須各修習2次。

四、資訊工程碩士班修習網路通訊專題研究、軟體發展專題研究與系統整合專題研究課程三選一。

五、口試前應完成下列要件始可提出學位考試申請:

(一)修畢碩士班規定學分。

(二)研究成果滿足下列任一條件（需提供證明文件，如論文接受信/投稿完成信與投稿論文、專利申請書等）:

Ⅰ.一篇經指導教授認可並需指導教授列名，且以研究生為第一作者(教師除外)之學術論文;英文論文須已投稿，中文論文須已被接受。

Ⅱ.已提出一項經指導教授認可並需指導教授列名，且以研究生為第一發明者(教師除外)之國內外發明專利申請。

Ⅲ.參加經指導教授認可並需指導教授列名之全國或國際性，並經系務會議核可之競賽，獲得佳作(含)以上。參賽作品應至少有一位指導教授掛名，且除指導教授外，申請人列於其餘作者之第一順位。若競賽只分等級而無排名，名次之認定，第二或三名分別相當於只有一或二個作品列名於前。

Ⅳ.經指導教授核可並需指導教授列名，以研究生為第一作者(教師除外)完成一顆下線且量測成功晶片。

Ⅴ.經指導教授認可之資訊工程相關創新系統實作並需公開展示。

六、通過學位論文口試。

七、【研究生應於申請學位考試前修習通過於「臺灣學術倫理教育資源中心」(https://ethics.nctu.edu.tw/)網路教學平台之「學術研究倫理教育」課程】等相關規定。

1.The minimum graduation requirement for this department's master's program is 32 credits. The 6 credits from Thesis Supervision I and II, as well as education credits, do not count toward this total. To remain enrolled, students must take at least one course (including thesis); otherwise, a leave of absence must be arranged. Students who have completed the minimum graduation credits but are still working on their thesis must enroll in 'Thesis' each semester starting in the next academic year.

2.All elective courses offered by this department's master's program will count as graduation credits. Courses taken from other departments' master's programs may count for

up to 6 credits toward this department's graduation requirements, but approval must be obtained before enrolling.

3. The required courses, Seminar and Advanced Seminar, must each be taken twice.

4. Students must choose one of the following courses: Research on Network Communication I, Research on System Integration I, or Research on Software Development I.

5. Before the oral examination, the following requirements must be completed to submit the application for the degree examination.

(1) Completion of the required credits for the master's program.

(2) The research results must meet at least one of the following conditions (proof documents are required, such as acceptance letters for papers, submission confirmation letters along with submitted papers, or patent applications).

(I) An academic paper approved by the supervising professor, with the professor listed as a co-author and the graduate student as the first author (excluding faculty). English papers must have been submitted, while Chinese papers must have been accepted.

(II) A domestic or foreign patent application has been submitted, approved by the supervising professor, with the professor listed as a co-inventor and the graduate student as the first inventor (excluding faculty).

(III) Participation in a national or international competition, approved by the supervising professor and requiring the professor's name to be listed, with recognition of an award of 'honorable mention' or higher. The submitted work must have at least one supervising professor listed as a co-author, and the applicant must be listed as the first author among the remaining authors, excluding the supervising professor. If the competition only categorizes awards without ranking, then second or third place is equivalent to having only one or two works listed at the top.

(IV) With the approval of the supervising professor and the professor's name listed, a graduate student (excluding faculty) has completed a tape-out chip and successfully tested it.

(V) An innovative system implementation related to computer engineering, approved by the supervising professor, must be publicly demonstrated.

6. Passing the thesis oral examination.

7. Graduate students must complete and pass the "Academic Research Ethics Education" course provided by the "Taiwan Academic Ethics Education Resource Center" (https://ethics.nctu.edu.tw/) on its online teaching platform, among other related requirements, before applying for the degree examination.