國立彰化師範大學
資訊工程學系學士班畢業條件表暨課程架構表
(111學年度入學學生適用)

National Changhua University of Education

Graduation Requirements and Course Structure for Bachelor's Program of Computer Science and Information Engineering

(Applicable for students in 111 academic year)

列印日期(Print Date:2025/06/20)

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
計算機技術 Practicum in Computer	2/4	1	1
計算機概論 Introduction to Computer Science	3/3	1	1
程式設計 Program Design	3/3	1	1
微積分(一) Calculus I	3/3	1	1
物件導向程式設計 Object Oriented Program Design	3/3	1	2
進階程式設計 Advanced Program Design	3/3	1	2
微積分(二) Calculus II	3/3	1	2
數位邏輯 Digital Logic	3/3	1	2
線性代數 Linear Algebra	3/3	1	2
微處理機技術 Practicum in Microprocessors	2/4	2	1
資料結構 Data Structure	3/3	2	1
電腦網路 Computer Networks	3/3	2	1
離散數學 Discrete Mathematics	3/3	2	1
計算機組織 Computer Organization	3/3	2	2
程式語言理論與實務 Theory and Practice of Programming Language	3/3	2	2
電子技術(一) Electronic Technology I	1/2	2	2
電子學(一) Electronics I	3/3	2	2
數位系統技術 Digital System Lab	2/4	2	2
作業系統 Operating Systems	3/3	3	1
計算機演算法	3/3	3	1

Computer Algorithms			
機率論 Probability Theory	3/3	3	2
專題（一）(至少2學分) **Special Topics(Ⅰ)(2 credits is least required)**			
系統整合專題(一) Topics in System Integration I	2/4	3	2
軟體發展專題(一) Topics in Software Development I	2/4	3	2
網路通訊專題(一) Topics in Network Communication I	2/4	3	2
專題（二）(至少2學分) **Special Topics(Ⅱ)(2 credits is least required)**			
系統整合專題(二) Topics in System Integration II	2/4	4	1
軟體發展專題(二) Topics in Software Development II	2/4	4	1
網路通訊專題(二) Topics in Network Communication II	2/4	4	1

二.系選修課程

Ⅱ.Department Elective Courses

課程名稱 Course Name	學分/學時 Credit(s)/ Hour(s)
JAVA程式設計 Java Programming	3/3
科技英文 Technical and Scientific English	2/2
硬體描述語言 Hardware Description Language	3/3
電子技術(二) Electronic Technology Ⅱ	1/2
電子學(二) Electronics II	3/3
數位系統 Digital System	3/3
系統分析與設計 System Analysis & Design	3/3
物件導向分析與設計 Object-Oriented Analysis and Design	3/3
資料庫系統 Database System	3/3
電腦網路進階 Advanced Computer Networks	3/3
網際網路資料庫程式設計 Internet Database Programming	3/3
分波多工網路 Wavelength Division Multiplexing Network	3/3
可程式邏輯設計 Programmable Logic Design	3/3
免執照頻段之無線通訊系統 Wireless Communication on Unlicensed Band	3/3
系統程式	3/3

System Programs	
計算機結構 Computer Architecture	3/3
計算機圖學 Computer Graphics	3/3
區域網路 Local Area Netwrok	3/3
嵌入式系統 Embedded Systems	3/3
無人機程式設計 Programming for the unmanned aerial vehicle	3/3
無線通訊網路 Wireless Communication Networks	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
資訊科技科教材教法 Instructional Materials and Methods for Informational Technology	2/2
網路程式設計 Network Programming	3/3
網路管理 Network Management	3/3
網際網路交換技術(一) Internet Routing Technology I	3/3
數位晶片設計 Digital Chip Design	3/3
Linux系統管理 Linux System Administration	3/3
UNIX系統程式設計 Unix System Programming	3/3
分散式系統 Distributed Systems	3/3
平行計算 Parallel Computing	3/3
平行計算最佳化技術 Optimized Parallel Computing	3/3
行動計算 Mobile Computing	3/3
物聯網 Internet of Things	3/3
計算機算術 Computer Arithmetic	3/3
高效能計算 High Performance Computing	3/3
高等計算機結構 Advanced Computer Architecture	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
智慧物聯網實務 Practice of Intelligent Internet of Things	3/3
無線區域與都會網路	3/3

Wireless Local and Metropolitan Area Network	
視窗程式設計 Windows Programming	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技術 Design Techniques of VLSI	3/3
雲端系統 Cloud System	3/3
資料探勘 Data Mining	3/3
資料視覺化 Data Visualization	3/3
資訊科技科教學實習 Teaching Practicum for Informational Technology	2/2
圖形理論 Graph theory	3/3
網路安全 Network Security	3/3
網路通訊協定與效能分析 Performance evaluation of network protocols	3/3
網際網路交換技術(二) Internet Routing Technology II	3/3
網際網路協定 Internet Protocols	3/3
數位影像處理 Digital Image Processing	3/3
5G核心網路設計與實作 5G Core network Design and Practices	3/3
人工智慧 Artificial Intelligence	3/3
大數據分析實務 Practice of big data analysis	3/3
企業資訊應用實務(一) Hands on Lab of Information System for Enterprise I	3/3
系統晶片設計導論 The Introduction of System chip Design	3/3
車載通訊技術 Vehicular Communication Techniques	3/3
計算理論 Computing Theory	3/3
計算機視覺 Computer Vision	3/3
排隊理論 Queuing Theory	3/3
統計學 Statistics	3/3
嵌入式系統程式設計 Embedded Systems Programming	3/3
資訊檢索與探勘 Information Retrieval and Data Mining	3/3
電腦動畫 Computer Animation	3/3
電腦遊戲設計	3/3

Computer Game Design	
電腦輔助電路設計 computer aided circuit design	3/3
機器學習 Machine Learning	3/3
類神經網路 Neural Networks	3/3
企業資訊應用實務(二) Hands on Lab of Information System for Enterprise II	3/3
次世代無線區域網路通訊協定 Next Generation Wireless Local Area Networks	3/3
高科技專利取得與攻防 High Tech Patent Application and Protection	3/3
高等演算法 Advanced Algorithm	3/3
專家系統 Expert Systems	3/3
資訊工程與科技法律 Information Technology and Technology Law	3/3
模糊邏輯 Fuzzy Logic	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、本系最低畢業學分為128學分，包含校必修28學分、系必修62學分、選修38學分;不含軍訓護理、體育、資訊科技科教材教法、資訊科技科教學實習及教育學程。
二、凡選修本系開設科目一律採認為本系畢業學分;修習外系開設科目(含全校共同課程)，採認10學分為本系畢業學分。
三、除轉學生、復學生、轉系生、國外交換回國學生或重修生外，本系規定必(選)修科目，必須修本系所開的課程，學生不得以任何理由要求選修他系或他校系之相同或類似課程作為抵免。
四、修習外系(含外校)科目抵免本系必/選修課程
(一)適用對象:轉學生、轉系生、復學生、國外交換回國生、重修生(不含停修生)
(二)須事先提出申請，經系課程委員會審核通過後方可修習。
(三)修習課程選擇系所優先以工學院各系、資訊管理學系、數學系所開課程為第一優先序；因衝堂再以理學院各相關 所所開課程為第二優先序，再衝堂方可選擇其他校系所所開課程。
(四) 轉學生、轉系生、復學生、國外交換回國生修習外系課程抵免本系必/選修課程，學分不佔其修習外系開設科目之10學分。
(五)重修生修習外系抵免本系必/選修課程，學分將列為其修習外系開設科目之10學分。
五、學生畢業前須通過資訊檢定測驗門檻：通過取得國外微軟、Cisco、Oracle、IBM、HP、Sun Java、Novel、Linux、Adobe等證書、CPE(參與檢定當次絕對成績為初級以上或相對成績採ACM-ICPC之排名規則為當次參測人數前三分之二者，其中之一)、獲得科技部大專生計畫、參加各項程式設計或資訊競賽(地區性以上)得到佳作以上，或經系務會議審查通過(含專題成果獲國內外資訊科技相關期刊或研討會接受或發表。)
六、選修本系為輔系者至少須修完本系必修專業課程42學分。(修習系外開設科目其學科名稱、學分數相同者，採認6學分為本系畢業學分，惟修習前須先申請經系課程委員會核准方可選修。)
七、選修本系為雙主修者至少須修完本系專業課程66學分(必修專業課程至少42學分以上)。(修習系外開設科目其學科名稱、學分數相同者，採認9學分為本系畢業學分，惟修習前須先申請經系課程委員會核准方可選修。)
八、畢業總學分數之遠距教學課程學分數，不得超過畢業總學分數之二分之一。

1.The minimum number of credits required for graduation is 128 credits, comprising 28 credits of university- required courses, 62 credits of department-required courses, and 38 credits of elective courses. This count excludes Military Training, Nursing, Physical Education, Instructional Materials and Methods for Information Technology, Teaching Practicum for Information Technology, and educational programs.
2.All courses taken within this department's curriculum are recognized as credits for graduation; however, courses taken from other departments are only recognized as 10 credits toward graduation.
3.Except for transfer students, readmitted students, students transferring from other departments, international exchange students, or retake students, students must enroll in the required/selective courses offered by this department. Students are not permitted to request credit exemption by taking the same or similar courses from other departments or other schools.
4.Taking courses from other departments or other schools to exempt required/elective courses in this department:
(1)Applicable to transfer students, students transferring from other departments, readmitted students, international exchange students, and retake students (excluding students who have withdrawn from the course).
(2)Application must be made in advance and approved by the departmental curriculum committee before enrolling in the course.
(3)Courses offered by the College of Engineering, the Department of Information Management, and the Department of Mathematics will be given first priority. In the event of schedule conflicts, courses offered by relevant departments within the College of Science will be given second priority. If conflicts persist, courses from other departments or schools may be selected.
(4)For transfer students, students transferring from other departments, readmitted students, and international exchange students who take courses from other departments to exempt required/elective courses in this department, the credits will not be counted as part of the 10-credit limit for courses offered by other departments.
(5) For retake students who take courses from other departments to exempt required/elective courses in this department, the credit will be counted as part of the 10-credit limit for courses offered by other departments.
5.Students are required to pass an information certification test before graduation. This can be achieved by obtaining a certificate from Microsoft, Cisco, Oracle, IBM, HP, Sun, Java, Novell, Linux, or other relevant certificates. Alternatively, they can fulfill the requirement by participating in CPE (Collegiate Programming Examination), where the absolute score must be at Beginner level or above, or the relative score follows the ranking rules of ACM-ICPC, with the participant ranking in the top two-thirds of the total number of participants in that session. Additionally, students can fulfill this requirement by obtaining the National Science Council's College Student Project, participating in various programming or information competitions at the regional level or above, and achieving excellence. Approval by the department affairs meeting is also acceptable, which includes having project achievements accepted or published by domestic and international journals or conferences related to information technology.
6.Students who choose this department as a minor must complete a minimum of 30 credits of major courses within the department, including at least 24 credits from required major courses. If a course offered by another department has the same name and number of credits, only 6 credits will be recognized as graduation credits, but the application must be approved by the department curriculum committee before taking the course.
7.Students who choose to double major in this department must complete a minimum of 54 credits of major courses, including at least 42 credits from required major courses. If a course offered by another department has the same name and number of credits, only 9 credits will be recognized as graduation credits, but the application must be approved by the department curriculum committee before taking the course.
8.The number of credits obtained from distance learning courses must not exceed one-half of

the total number of credits required for graduation.