**元智大學 資訊工程學系 必修科目表**

**Department of Computer Science and Engineering**

**Yuan Ze University**

**List of Required Courses**

**（111學年度入學新生適用For students admitted in academic year 2022）**

111.04.20 一一○學年度第六次教務會議通過

Approved by the 6th Academic Affairs Meeting, Academic Year 2021, on April 20, 2022

111.09.21 一一一學年度第一次教務會議修訂通過

Amended by the 1st Academic Affairs Meeting, Academic Year 2022, on September 21, 2022

112.04.19 一一一學年度第六次教務會議修訂通過

Amended by the 6th Academic Affairs Meeting, Academic Year 2022, on April 19, 2023

112.05.31 一一一學年度第七次教務會議修訂通過

Amended by the 7th Academic Affairs Meeting, Academic Year 2022, on May 31, 2023

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| 學年Year學期Semester科目Course | 第一學年1st Academic Year | 第二學年2nd Academic Year | 第三學年3rd Academic Year | 第四學年4th Academic Year |
| 上Fall | 下Spring | 上Fall | 下Spring | 上Fall | 下Spring | 上Fall | 下Spring |
| 共同必修科目University Compulsory（21） | 國文（一）Chinese (I)（2） | 國文（二）Chinese (II)（2） |  |  |  |  |  |  |
| 英語（一）English (I)（2） | 英語（二）English (II)（2） |  |  |  |  |  |  |
| 程式語言共4學分，依各院修課規則辦理。(開課名稱：基礎程式設計)Fundamental Computer Programming is a four-credit course. For those who would like to registered “Fundamental computer programming”, he/she has to meet the college requirement. (Course Name: Fundamental Computer Programming) |
| 外語課程應修習10學分。「英語（一）」及「英語（二）」為基礎課程，採能力分級上課，共計二學期四學分。除了「英語（一）」及「英語（二）」外，畢業前應修畢三個不同主題式英語課程，共三學期5學分。大一英語能力後測「TOEIC模擬測驗」成績未達350分者，應修習「應試加強班」(EL260)。修習「應試加強班」期間之期末TOEIC模擬測驗成績未達350分者，則該科成績將「不及格」，並應再次修習「應試加強班」，直到取得TOEIC模擬測驗分數達350分(含)始得修習其他主題式英語課程。另開設「英語檢定」(EL360)計一學期1學分，「英語檢定」之修課限制與注意事項，請參照「通識外語『英語檢定』修課規定」，並由通識教學部公佈後施行。外國學生改修華語須經國際語言文化中心審核通過始可改修華語課程10學分，其華語課程10學分應含「華語檢定」1學分，「華語檢定」修課限制與注意事項，請參照「通識外語『英語檢定』修課規定」。凡本校大學部外國學生修習「華語(一)」或「華語(二)」任一課程成績未達60分，不得修習「華語(三)」、「華語(四)」。若修習「華語(三)」、「華語(四)」任一課程成績未達60分，不得修習「華語(五)」或「華語檢定」(EL372)。The undergraduate students must complete 10 required credits of foreign language courses.English (I) & (II) for the total 4 credits: English (I) and (II) are 4 credit elementary courses for the freshmen who are grouped on English competence; to complete within two semesters.English thematic course for the total 5 credits: English thematic courses are 5-credit English courses; students are required to obtain 5 credits through 3 different thematic courses for graduation. Students who do not reach the 350-point threshold of TOEIC Mock Exam in the end of the freshman year must take “English Testing” (EL260) course. Students will fail the course if they do not score higher than 350 points in TOEIC Mock Exam by the end of the course, and must repeatedly take the course until they can score higher than 350 points. “English Testing” (EL360) for the total 1 credit: For the requirements of registering “English Testing”, please refer to "the Regulation for Registering English Test" announced and implemented by the College of General Education.Foreign students need approval by ILCC for taking 10 credits of Mandarin Chinese courses as alternative courses of English.The undergraduate foreign students must pass Mandarin Chinese (I) and (II) before taking Mandarin Chinese (III) and (IV). Students must pass Mandarin Chinese (III) and (IV) before taking Mandarin Chinese (V) and Chinese Proficiency Test (EL372).英語檢定English Testing（1）、經典五十Fifty Canonized Books（2）、服務學習Service Learning（1） |
| 體育Physical Education（0） | 體育Physical Education（0） | 興趣選項體育Optional Physical Education（0） | 興趣選項體育Optional Physical Education（0） |  |  |  |  |
| 大學部必須修習4學期體育課程；其中2學期為大一體育課程原班級上課，另2學期為興趣選項體育課程。The undergraduate students must attend the physical education course for 4 semesters; 2 semesters for the freshman physical education courses, the other two semesters for the optional physical education courses. |
| 通識教育科目General Education（10） | 通識課程分為人文藝術、自然科學、社會科學及生命科學四大類。學生須於四大領域中各選修2學分課程，共計8學分。General Education program comprises four categories：Humanities, Natural Science, Social Science and Life Science. Students are required to take a 2-credit course from each category to get 8 credits before graduation.通識跨域課程General Education Interdisciplinary Course：此2學分學生可自由於通識講座課程、微課自主學習或在地多元文化課群中選課。惟外籍生與工程學院英語學士班、資訊學院英語學士班、人文社會學院英語學士班、電機通訊學院英語學士班學生仍須於四大領域中選課，依各院修課規定辦理。Students can select the 2 credits from a General Education Lecture course, Micro Credit courses, Self-Study courses, or Local-Multicultural courses. Only foreign students and undergraduates of International Programs in the Colleges of Engineering, Informatics, Humanities and Social Sciences, as well as Electrical and Communication Engineering are required to take a 2-credit course from the four categories according to each college’s policy before graduation. |
| 系必修科目Required Courses（69） | 微積分（一）Calculus(I)CS147(3) | 微積分（二）Calculus(II)CS148(3) | 線性代數Linear AlgebraCS233(3) | 機率與統計Probability and StatisticsCS226(3) | 編譯程式概論Introduction to CompilerCS321(3) | 專業實習（一）Practical Training(I)CS400(3) | 專業實習（三）Practical Training(III)CS426(3) | 影像處理概論Introduction to Image ProcessingCS362(3) |
| 程式設計（一）Computer Programming(I)CS106(3) | 離散數學Discrete MathematicsCS107(3) | 資料結構Data StructuresCS203(3) | 演算法概論Introduction to AlgorithmsCS309(3) | 內嵌式系統設計與實習Embedded System Design and PracticeCS379(3) | 專題製作（一）Special Project(I)CS416(3) | 專題製作（二）Special Project(II)CS417(3) |  |
| 普通物理General PhysicsCS152(3) | 程式設計（二）Computer Programming(II)CS114(3) | 資料通訊概論Introduction to Data CommunicationsCS229(3) | 組合語言與計算機組織Assembly Language and Computer OrganizationCS250(3) | 超大型積體電路設計導論Introduction to VLSI DesignCS378(3) | 軟體工程Software EngineeringCS377(3) | 資料庫系統概論Introduction to Database SystemCS352(3) |  |
| 資訊概論Introduction to Computer ScienceCS140(3) | 電子電路學Circuit TheoryCS153(3) | 數位系統設計Digital System DesignCS204(3) | 作業系統概論Introduction to Operating SystemCS305(3) | 計算機網路概論Introduction to Computer NetworksCS311(3) | 積體電路設計自動化導論Introduction to IC Design AutomationCS338(3) | 電腦與網路安全概論Introduction to Computer and Network SecurityCS354(3) |  |
|  | 電子電路實驗Electronic Circuits Lab.CS213(1) | 數位系統實驗（一）Introduction to Digital Systems Lab.(I)CS254(1) | 數位系統實驗（二）Introduction to Digital Systems Lab.(II)CS255(1) | 計算機圖學概論Introduction to Computer GraphicsCS314(3) | 開放平台軟體Open Platform SoftwareCS381(3) | 人機互動設計概論Introduction to Human-Computer Interaction DesignCS313(3) |  |
|  |  |  |  | 雲端運算與服務Cloud Computing and ServicesCS337(3) | 無線網路概論Introduction to Wireless InternetCS335(3) | 資料探勘Data MiningCS412(3) |  |
|  |  |  |  | 智慧物聯網Artificial Intelligence of ThingsCS349(3) | 多媒體系統概論Introduction to Multimedia SystemCS401(3) |  |  |
|  |  |  |  |  | 人工智慧概論Introduction to Artificial Intelligence CS310(3) |  |  |
|  |  |  |  |  | 大數據科學導論Big Data ScienceCS332(3) |  |  |
| 程式能力檢定Programming Language Proficiency TestCS425(0) |
| 學期學分小計Credit each semester | 12 | 13 | 13 | 13 | 9 | 6 | 3 | 0 |
| 備註Remarks | 1. 畢業學分：128學分。其中須包含共同必修及通識課程共31學分、系必修科目69學分、系選修科目18學分。Minimum credits required for a B.Sc. degree: 128 credits, including 31 credits from common required courses and general education, 69 credits from departmental required courses, and 18 credits from departmental electives.
2. 通識教育科目學分只採計至多10學分，超修之學分將不列入畢業學分。The maximum credits for general education courses is 10, the exceeding credits will not be counted.
3. 「程式能力檢定」課程及格標準：參加「大學程式能力檢定（Collegiate Programming Examination-CPE）」，一次答對至少2題。Programming proficiency test requirement: take the Collegiate Programming Examination (CPE) and answer at least two questions correctly at a time.
4. 專業實習與專題製作兩系列課程至少須選修一系列之所有課程：Students must choose between two tracks, Practical Training or Special Project, as well as the series of courses corresponding to each track:
5. 專業實習（校外）共計四門課，包括專業實習（一）、專業實習（二）、專業實習（三）與專業實習（四）。Practical Training (off-campus) is composed of 4 courses: Practical Training I, II, III, and IV.
6. 專題製作（校內）共計兩門課，包括專題製作（一）與專題製作（二）。Special Project (on-campus) is composed of two courses, including Special Project I and II.
7. 下列五大領域課程，至少須選修四領域，且每一領域至少須選修一門。若選修超過一門，多修的課程採計為系選修課程。For the following five areas of study, students are required to choose at least four areas and take at least one course from each of the four areas. When students take more than one course from a specific area, the additional courses will be counted towards departmental electives.
8. 軟體系統：「軟體工程」、「資料庫系統概論」、「開放平台軟體」、「雲端運算與服務」。Software System area: Software Engineering, Introduction to Database System, Open Platform Software, and Cloud Computing and Services.
9. 計算機系統：「內嵌式系統設計與實習」、「超大型積體電路設計導論」、「積體電路設計自動化導論」、「編譯程式概論」。Computer System area: Embedded System Design and Practice, Introduction to VLSI Design, Introduction to IC Design Automation, and Introduction to Compiler.
10. 網路系統：「計算機網路概論」、「無線網路概論」、「電腦與網路安全概論」。Network System area: Introduction to Computer Networks, Introduction to Wireless Internet, and Introduction to Computer and Network Security.
11. 多媒體系統：「多媒體系統概論」、「人機互動設計概論」、「計算機圖學概論」、「影像處理概論」。Multimedia System area: Introduction to Multimedia System, Introduction to Human-Computer Interaction Design, Introduction to Computer Graphics, and Introduction to Image Processing.
12. 人工智慧系統：「人工智慧概論」、「大數據科學導論」、「資料探勘」、「智慧物聯網」。Artificial Intelligence System area: Introduction to Artificial Intelligence, Big Data Science, Data Mining, and Artificial Intelligence of Things.
13. 擋修規定：Pre-requisites：通過「程式能力檢定」，始得修習「專題製作（一）」、「專題製作（二）」、「專業實習（一）」、「專業實習（二）」、「專業實習（三）」、「專業實習（四）」。Students must pass the programming proficiency test requirement before taking Special Project I and II, or Practical Training.
14. 「專業實習（三）」與「專題製作（二）」為終端學習課程。“Practical Training (III)” and “Special Project (II)” are Experiential Learning courses.
15. 「專業實習（三）」與「專題製作（二）」為本系「議題導向實作專題課程」.“Practical Training (III)” and “Special Project (II)” are courses of "Topic and Implementation-oriented courses".
16. 「數位系統實驗（一）」與「數位系統實驗（二）」為本系「數位應用相關課程」，畢業前須通過至少2門「數位應用相關課程」(可至本系或外系修習)。“Introduction to Digital Systems Lab.(I)” and “Introduction to Digital Systems Lab.(II)” are courses of 'digital application courses'. Students require passing at least two 'digital application courses'. (Student may take 'digital application courses' from another department.)
17. 有關共同必修及通識教育科目之詳細規定，另依據「元智大學共同必修科目表」之規定辦理。Regarding the details and requirements of general education and common required courses, please refer to the Common Required Course List provided by the University.
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AA-CP-04-CF02 (1.3 版)／102.04.19 修訂