**元智大學 電機通訊學院英語學士班 必修科目表
International Bachelor Program in Electrical and Communication Engineering for at Yuan Ze University**

**List of Required Courses**

**（114學年度入學新生適用）**

**（Applicable to Students Admitted in Academic Year of 2025）**

114.04.23一一三學年度第五次教務會議通過

 Passed by the 5th Academic Affairs Meeting, Academic Year 2024, on April 23, 2025

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| --- | --- | --- | --- | --- |
| 學年Academic Year學期Semester科目Subject | 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Common Compulsory（17） | 中文閱讀、思辨與表達（一）Chinese Reading, Critical Thinking, and Expression （I）（2） | 中文閱讀、思辨與表達（二）Chinese Reading, Critical Thinking, and Expression（II）（2） |  |  |  |  |  |  |
| 英語（一）English （I）（2） | 英語（二）English （II）（2） |  |  |  |  |  |  |
| 1. 外語課程應修習 10 學分。
2. 「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。
3. 除了「英語（一）」及「英語（二）」外，畢業前應修畢二個不同主題式英語課程，共計 4 學分。
4. 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。
5. 另開設「英語檢定」（EL160）計一學期2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。
6. 外國學生可修華語課程10學分，其華語課程 10 學分應含「華語檢定」2 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」及「元智大學外籍生華語學分抵免規定」。
7. 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「華語檢定」（EL375）。

1. The undergraduate students must complete 10 required credits of foreign language courses.2. English (I) & (II) for the total 4 credits: English (I) and (II) are 4 credits elementary courses for the freshmen who are grouped on English competence; to complete within two semesters.3. English thematic course for the total 4 credits: English thematic courses are 4-credit English courses; students are required to obtain 4 credits through 2 different thematic courses for graduation. 4. 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 of TOEIC Mock Exam by the end of the course, and must repeatedly take the course until they can score higher than 350 points. 5. “English Testing” (EL160) is a 2-credit course: 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.6. Foreign students could take 10 credits of Mandarin Chinese courses as alternative courses of English. The 10 credits in Mandarin Chinese courses must include 2 credits for “Chinese Proficiency Test”. For the specific restrictions and considerations for taking the “Chinese Proficiency Test”, please refer to the 'General Education Foreign Language “English Proficiency Exam” Course Requirements' and 'Yuan Ze University Regulations for Exempting the Mandarin Chinese as a Foreign Language Credit ' for more details.7. 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 'Chinese Proficiency Test' (EL375). 英語檢定English Testing（2）、經典選讀A Guide to Classics（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。通識跨域課程，學生可自由於四大領域課程中選課。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. General Education Interdisciplinary Course 2 credits can be freely chosen by students from any of the four categories通識教育科目10學分，須選修英語授課課程。These five courses admitted must be the General Education Courses taught in English. |
| 學年(Academic 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 |
| ★院必修科目CollegeCompulsory（4） | 基礎程式設計-PythonFundamental Computer Programming- Python(2)EN004 | 基礎程式設計-CFundamental Computer Programming- C(2)EN003 |  |  |  |  |  |  |
| 學期學分小計Credits each semester | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| ★專業基礎必修科目Basic Compulsory Courses(**56**) | 微積分(一)Calculus(I)(3) EI101 | 微積分(二)Calculus(II)(3) EI102 | 電子學(一)Electronics(I)(3) EI201 | 電子學(二)Electronics(II)(3) EI202 |  | 畢業專題Graduation Project(3) EI302 | 畢業專題Graduation Project(3) EI302 |  |
| 普通物理(一)General Physics(I)(3) EI103 | 普通物理(二)General Physics(II)(3) EI104 | 工程數學(一)Engineering Mathematics(I)(3) EI203 | 工程數學(二)Engineering Mathematics(II)(3) EI204 |  |  |  |  |
| 線性代數Linear Algebra(3) EI115 | 邏輯電路設計Digital Logic Design(3) EI107 | 電路學Circuit Theory(3) EI205 | 電磁學(一)Electromagnetics (I)(3) EI206 |  |  |  |  |
| 計算機概論Introduction to Computer Science(3) EI105 | 邏輯電路實驗Logic Circuit Lab.(1) EI108 | 電子電路實驗(一)Electronic Circuits Experiments(I)(1) EI207 | 電子電路實驗(二)Electronic Circuits Experiments(II)(1) EI208 |  |  |  |  |
| 程式語言實驗(一)Programming Language Labs(I)(1) EI109 | 普通物理實驗General Physics Lab.(1) EI106 |  | 機器學習導論Introduction to Machine Learning(3) EI228 |  |  |  |  |
| 科技英文會話Science and Technology English Conversation(2) EI111 | 程式語言實驗(二)Programming Language Labs(II)(1) EI110 |  | 電資通訊概論Introduction to Electrical and Computer Communications Engineering(1) EI113 |  |  |  |  |
|  | 科技英文導讀Science and Technology English Reading(2) EI112 |  |  |  |  |  |  |
| 學期學分小計Credits each semester | 15 | 14 | 10 | 14 | 0 | 3 or 0 | 0 or 3 | 0 |
| 備註Remarks | 1. 括弧內數字為學分數。Parenthesized numbers are course credits.
2. **畢業學分**：**128學分** (通識教育學分只採計至多10學分，超修之學分將不列入畢業學分。)Required credits for graduation: at least 128 credits (The maximum credits for general education courses is 10, the exceeding credits will not be counted.)
3. **必修學分：87學分** (包含共同必修：17學分、院必修：4學分、通識教育：10學分、專業基礎必修：56學分)Required credits: 87 credits (University Compulsory Courses: 17 credits; College Compulsory Courses: 4 credits; General Education Courses: 10 credits; Basic Compulsory Courses: 56 credits.)
4. **專業選修**：**至少22學分**。Elective Courses: at least 22 credits.
5. **自由選修：至少19學分**(含專業自主學習至多3學分，不包含通識教育學分及共同必修學分)。Free Elective Courses: at least 19 credit, including up to 3 credits from disciplinary self-directed learning, excluding General Education Courses and University Compulsory Courses.
6. 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。Please refer to Yuan Ze University Common Required Course List for General Education courses information and regulations.
7. 必修課程初次修課(停修不算)須在本班修讀始予承認。The first-time registration (excluding course withdrawal) is limited to ones offered by this program.
8. 英語授課課程以「★」表示，包含院必修4學分、通識教育10學分及專業基礎必修56學分、專業選修 60學分。潛在英語授課課程以「☆」表示。「★」：The credits granted by English-taught courses include 4 credits from College Compulsory Courses, 10 credits from General Education, 56 credits from Basic Compulsory Courses, 60 credits from Elective Courses. 「☆」: The potential English-taught courses.
9. 終端學習課程：畢業專題The experiential learning courses：Graduation Project.
10. 須通過大學程式能力檢定 (Collegiate Programming Examination, 簡稱CPE) 累計二題始得畢業；或取得Amazon (AWS)、Google、Microsoft雲端證照者，「基礎級」證照（無論張數）僅能折抵一題，其餘進階證照一張折抵一題。

There are two avenues to meet the graduation requirements on programming skill.1. The students could take the Collegiate Programming Examination (CPE) and pass at least two CPE questions in a cumulative manner during their undergraduate study.2. The students could earn Amazon (AWS), Google, or Microsoft cloud certifications. The foundational certifications (regardless of the number of certifications the student owns) can be applied in equivalence to only a single CPE question while other advanced certifications can be applied in a one-to-one equivalence to the CPE questions.1. 修習「普通物理實驗」、「電子電路實驗(一)／(二)」等3門課程者，必須通過該課程所規定之儀器檢定項目。Students who study the General Physics Lab., Electronic Circuits Experiment (I), (II) must pass their required tests for instrument operation.
2. 畢業專題(EI302))為必修「議題導向實作專題課程」3學分. Graduation Project (EI302) is a compulsory 3 credit course of "Topic and Implementation-oriented courses".
3. 海外交換學習每學期，最多可折抵專業選修 12學分，但海外所修課程必須屬於電通工程，認抵需依本班規定辦理。Oversea exchange studying each semester can offset maximally 12 credits of the Elective Courses. The accepted credits of the courses taken oversea have to be related to the electrical and communication engineering, which courses and credits waiver and transference should be standardized by this program.
4. 邏輯電路實驗(EI108)、超大型積體電路設計導論(EI309)、人機互動概論(EI318)、深度學習使用Python(EI320)、電動載具技術(EI326)、高階數位IC設計(EI407)、微感測器及感測電路設計(EI408)、演化計算(EI415)為本班「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」(可至本班或外系修習)。Logic Circuit Lab. (EI108), Introduction to VLSI (EI309), Human-Computer Interaction (EI318), Deep Learning with Python(EI320), Electric Vehicles Technology(EI326), High-Level IC Design (EI407), Design on Micro-Sensor and Sensor Circuits (EI408), Evolutionary Computation( EI415) are courses of “Digital Application Courses.” Students are required to pass at least two “Digital Application Courses.” (Students may take these courses from other department.)
5. 為增進學生英文能力，鼓勵選修英語授課課程，其修習之課程科目及學分數之認抵需依學系規定辦理。To improve students’ English, we encourage students to take the courses in English, which courses and credits waiver and transference should be standardized by each department.
6. 自106學年度起軍訓課程由必修改為選修，該學分納入當學期修課學分數計算，但不納入畢業總學分計算。The military education courses are no longer compulsory starting the 106 academic year. The military education courses will not be accumulated to the graduation requirements, but they can be counted as taken credits for each semester.
7. 修習碩士班課程以大三以上學生為限，且不得修習碩士在職專班課程。Master's degree courses are limited to students in their third year or above, and students are not allowed to take courses from the Executive Master program.
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**元智大學 電機通訊學院英語學士班 專業選修科目表**

**（114學年度入學新生適用）**

**International Bachelor Program in Electrical and Communication Engineering at Yuan Ze University**

**List of Elective Courses**

**（Applicable to Students Admitted in Academic Year of 2025.）**

114.04.23一一三學年度第五次教務會議通過

 Passed by the 5th Academic Affairs Meeting, Academic Year 2024, on April 23, 2025

| 學年Academic 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 |
| 電信工程組Communications Engineering Group |  |  | ☆工程機率Probability for Engineers(3) EI211 | ☆訊號與系統Signals and Systems(3) EI212 | ☆通訊系統Communications System(3) EI301 | ☆數位通訊 Digital Communications(3) EI304 |  |  |
| 高頻技術組Microwave Engineering Group |  |  |  |  | ☆電磁學(二) Electromagnetics(II)(3) EI303 | ☆電磁波Electromagnetic Waves(3) EI306 | ★微波工程導論 Introduction to Microwave Engineering(2) EI403 | ☆射頻電路設計與應用The Design and Applications of RF circuits(3) EI402 |
|  |  |  |  | ☆電子學(三)Electronics(III)(3) EI317 | ☆通訊電子學Communication Electronics(3) EI401 |  |  |
| 智慧資訊組Intelligent Information Engineering Group |  |  |  | ☆通訊網路Communications Network(3) EI213 | ☆數位信號處理概論Introduction of Digital Signal Processing(3) EI404 | ☆數位系統設計與實驗Digital System Design with Lab.(3) EI322 | ★演化計算Evolutionary Computation(3) EI415 |  |
|  |  |  | ☆離散數學Discrete Mathematics(3) EI218 |  | ☆機器人作業系統Robot Operating System(3) EI324 |  |  |
|  |  |  | ★多媒體通訊概論Introduction toMultimedia Communications(3) EI224 |  | ★最佳化與啟發式演算法Optimization and Heuristics(3) EI330 |  |  |
|  |  |  | ★雲端計算概論Introduction to Cloud Computing(3) EI226 |  |  |  |  |
| 控制組Electrical Control Engineering Group |  |  |  | ★控制系統Control Systems(3) EI223 | ☆電機機械Electrical Machinery(3) EI307 | ☆智慧控制概論Introduction of Intelligent Control(3) EI310 | ★機器人概論Introduction to Robotics(3) EI412 |  |
|  |  |  |  | ★自主移動機器人Autonomous Mobile Robot(3) EI319 | ★電力電子Power Electronics(3) EI406 |  |  |
|  |  |  |  |  | ★電動載具技術Electric Vehicles Technology(3) EI326 |  |  |
| 電子組Electronic Engineering Group |  |  |  |  | ★超大型積體電路設計導論Introduction to VLSI(3) EI309 | ☆數位信號處理概論Introduction to Digital Signal Processing(2) EI316 |  |  |
|  |  |  |  |  | ☆高階數位IC設計 High-Level IC Design(3) EI407 |  |  |
|  |  |  |  |  | ☆微感測器及感測電路設計Design on Micro-Sensor and Sensor Circuits(3) EI408 |  |  |
| 數位科技組Digital Science and Technology Group |  |  | ★醫療高科技應用新知Innovations in Medical High-Tech Applications(3) EI221 | ★人文醫療科技及場域見習Humanistic Medical Technology and On-site(3) EI222 | ☆生物醫學工程概論Biomedical Engineering(3) EI314 | ☆計算機組織(一) Computer Structure(I)(3) EI409 |  | ☆電腦網路Computer Network(3) EI311 |
|  |  | ☆資料結構Data Structures(3) EI219 |  |  | ☆人機互動概論Human-Computer Interaction(3) EI318 |  |  |
|  |  |  |  |  | ★深度學習使用PythonDeep Learning with Python(3) EI320 |  |  |
| 光電組Opt-Electronic Engineering Group  |  |  |  | ☆半導體光學Semiconductor Optics(3) EI215 | ☆電磁學(二) Electromagnetics(II)(3) EI303 | ★半導體元件物理Semiconductor Devices Physics(3) EI312 | ☆近代物理(一) Modern Physics(I)(3) EI411 |  |
|  |  |  |  |  | ★再生能源轉換及儲存系統Renewable Energy Conversion & Storage systems(3) EI328 | ★半導體製程技術Semiconductor Processing Technology(3) EI413 |  |
|  |  |  |  |  |  | ★半導體加工技術Semiconductor Processing Technology(3) EI417 |  |
| 英文精進English Booster |  |  | ★科技英文寫作Science and Technology English Writing(2) EI209 | ★科技英文簡報Science and Technology English Presentation(2) EI210 | ★英語簡報技巧English Presentation Skills(3) IN311 |  |  |  |
|  |  | 實用科技英文English for Engineering & Technology(2) EL222 | 實用英文寫作Practical English Writing(2) EL227 |  |  |  |  |
|  |  | 學術英文寫作English Academic Writing(2) EL229 | 口語英文溝通Oral English Communication(2) EL228 |  |  |  |  |
|  |  | 英語演說技巧English Public Speaking(2) EL233 |  |  |  |  |  |
| 備註Remarks | 1. 括弧內數字為學分數。Parenthesized numbers are course credits.
2. 專業選修：至少22學分，含七大領域(電信工程組、高頻技術組、智慧資訊組、控制組、電子組、數位科技組及光電組)至少18學分；英文精進至少4學分（超修學分將不列入畢業學分）。

Elective Courses: at least 22 credits, Seven Major Fields (Communications Engineering Group, Microwave Engineering Group, Intelligent Information Engineering Group, Electrical Control Engineering Group, Electronic Engineering Group, Digital Science and Technology Group, Opt-Electronic Engineering Group) at least 18 credits, English Booster: at least 4 credits (The maximum credits for English Booster is 4, the exceeding credits will not be counted.). |

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