**元智大學電機工程學系(丙組) 必修科目表**

**（110學年度入學新生適用）**

Department of Electrical Engineering (

Program C), Yuan Ze University

List of Required Courses for the Undergraduate Program

（Applicable to newly-admitted students in 2021）

110.05.05 一○九學年度第五次教務會議通過

110.06.16 一○九學年度第六次教務會議修訂通過

Passed by the 5th Academic Affairs Meeting, Academic Year 2020, on May 05, 2021

Amended by the 6th Academic Affairs Meeting, Academic Year 2020, on June 16, 2021

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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 Courses（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) |
| 外語課程應依「通識外語修課規定」修習，共計10學分。1. 「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。
2. 除了「英語（一）」及「英語（二）」外，應修習主題式英語課程三學期5學分，畢業前需修畢三個不同英語課程，始取得畢業資格。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」，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。
3. 另開設「英語檢定」計一學期1學分，「英語檢定」之修課限制與注意事項，請參照「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」修課限制與注事意項，請參照「英語檢定」修課規定。凡本校大學部外國學生(不含交換生)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」、「華語五」、「華語六」，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」。The undergraduate students must complete 10 required credits of foreign language courses as follows:* English (I), (II): 4 credits
* English thematic course: 5 credits
* English Test: 1 credit

English (I) and (II) are 4 credits elementary courses for the freshmen who are grouped on English competence-based to complete within two semesters.English thematic courses are 5-credit of English courses; students are required to obtain 5 credits through 3 different thematic courses for graduation.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, exchange students excluded, must score 60 points or higher to pass Mandarin Chinese (I) and (II) before taking Mandarin Chinese (III), (IV), (V), and (VI). Students must score 60 points or higher in Mandarin Chinese (III) and (IV) before taking Mandarin Chinese (V) and (VI).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，另需通過「游泳能力檢定」及「心肺適能檢定」等二項檢測，列為畢業門檻。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, students must pass both swimming and cardiopulmonary function tests. |
| 通識教育科目General EducationCourses（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. |
| 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 |
| 電機專業基礎共同必修科目Professional Basic Compulsory Courses ( 11) | 微積分(一)Calculus(I)(3)EEC105 | 微積分(二)Calculus(II)(3)EEC106 |  |  |  | 畢業專題Graduation Project(3)EEC327 |  |  |
| 程式語言實驗(一)Programming Language Labs(I)(1)EEC113 | 程式語言實驗(二)Programming Language Labs(II)(1)EEC114 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| 學期學分小計Credits each semester  | 4 | 4 | 0 | 0 |  | 3 |  |  |
| 電機(丙組)必修科目（31） | 普通物理(一)General Physics(I)(3)EEC101 | 普通物理(二)General Physics(II)(3)EEC102 | 工程數學(一)Engineering Mathematics(I)(3)EEC202 | 工程數學(二)Engineering Mathematics(II)(3)EEC203 |  |  |  |  |
|  | 普通物理實驗(一)General Physics Lab. (1)EEC103 | 電子學(一)Electronics(I)(3)EEC204 | 電子學(二)Electronics(II)(3)EEC205 |  |  |  |  |
|  |  | 電子電路實驗(一)Electronic Circuits Experiments(I)(1)EEC206 | 電子電路實驗(二)Electronic Circuits Experiments(II)(1)EEC207 |  |  |  |  |
|  |  | 電路學Circuit Theory(3)EEC201 | 半導體光學Semiconductor Optics (3)EEC214 |  |  |  |  |
|  |  |  | 電磁學(一)Electromagnetics (I)(3)EEC208 | 半導體光學實驗Semiconductor Optics Laboratory (1)EEC215 |  |  |  |  |
| 學期學分小計Credits each semester | 3 | 4 | 13 | 11 |  |  |  |  |
| 備註 Remarks | 1. 括弧內數字為學分數.

The numbers in parentheses are referred as credit.1. 必修科目計：73學分. (包含共同必修21學分、通識教育科目10學分、電機專業基礎共同科目11學分、電機(丙組)必修科目：31學分)

The course requirement is 73 credits, including 23 co-requisite course credits, 10 general education course credits, 11 prerequisite course credits, and 31 group prerequisite course credits).1. 電機系丙組專業選修科目至少選修38學分，其餘選修17學分不限於本組、系、院修課，可跨至其他學院修課。

The minimum request for electrical engineering group C major is 38 credits. Outside the Department of elective up to recognize the (17) credits.1. 畢業學分：共128學分.(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 minimum credits requirement for graduation is 128 credit. (The maximum credits for general education courses is 10, the exceeding credits will not be counted.)1. 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，共同必修超修學分不得列入畢業學分數。

Please refer to Yuan Ze University Common Required Course List for General Education courses information and regulations.1. 本組學生修習電通學院各系專業課程，皆予承認；但必修課程初次修課須在本組修讀始予承認。

Students are permitted to take courses offered in College of Electrical and Communication Engineering, however the first compulsory courses has to be taken in department of electrical engineering group C.1. 終端學習課程：畢業專題

The experiential learning courses: Graduation project.1. 至少須修畢一項本組制訂之學程，始得畢業，不包含微學程。

Students need to take at least one course package offered by the department group C to fulfill the graduation requirement.1. 修習普通物理實驗(一)、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。

Those who take courses of General Physics Lab.(I), Electronic Circuits Experiments(I), or Electronic Circuits Experiments(II) are required to pass the corresponding certification exams.1. 議題導向實作專題課程：畢業專題

Graduation Project (EEC327) is a compulsory three-credit course of "Topic and Implementation-oriented courses".十一、本組「數位應用相關課程」如下列，畢業前須通過至少2門「數位應用相關課程」(可至本組或外系修習)。傅立葉變換及其應用(EEC312) 、光電程式設計(EEC321) 、嵌入式系統之光電應用(EEC323)、感測器與其應用(EEC329)、無人商店感測技術(EEC424) 、色彩與影像處理(EEC322)、人工智慧與影像辨識(EEC425)、影像檢測技術(EEC523)、機器學習與其應用(EEC561)。Students require passing at least two 'digital application courses'. (Student may take 'digital application courses' from another department.) Fourier Transform Theory and Applications(EEC312) , Electro-Optics Programming(EEC321) , Photonics Applications of Embedded Systems (EEC323),Sensors and their applications(EEC329), Sensor technologies of checkout-free store(EEC424), Color and Image Processing (EEC322), Artificial Intelligence and pattern recognition (EEC425),Image Inspection and Detection Technique (EEC523), Machine Learning and Its Applications(EEC561), are courses of 'digital application courses'.十二、因特殊狀況需求，得微調課程開課時間。 |

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**元智大學電機工程學系(丙組) 選修科目表**

**（110學年度入學新生適用）**

Department of Electrical Engineering (Program C), Yuan Ze University

List of Elective Courses for the Undergraduate Program

（Applicable to newly-admitted students in 2020）

110.05.05 一○九學年度第五次教務會議通過

110.06.16 一○九學年度第六次教務會議修訂通過

Passed by the 5th Academic Affairs Meeting, Academic Year 2020, on May 05, 2021

Amended by the 6th Academic Affairs Meeting, Academic Year 2020, on June 16, 2021

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| 上Fall | 下Spring | 上Fall | 下Spring | 上Fall | 下Spring | 上Fall | 下Spring |
| 電機(丙組)選修科目Department Elective | 基礎數學實作EEC112 | 普通化學EEC108 | 光電程式設計EEC321 | 嵌入式系統之光電應用EEC323 | 電磁學(二)EEC308**必選修** | 電磁學（三）EEC315 | 雷射導論EEC404 | 光電量測系統導論EEC418 |
| 光電概論(1學分)EEC111 | 線性代數EEC110 |  |  | 進階工程數學EEC421 | 近代物理（二）EEC306 | 光電元件製程EEC407 | 新興平面顯示器原理與技術導論EEC411 |
| 光電與產業EEC313 | 色度學EEC414 |  |  | 近代物理(一) EEC305 | 色彩與影像處理EEC322 | 🞿固態物理導論EEC408**固態物理****EEC509** | 量子力學導論EEC413 |
| 計算機概論EEC107 | 半導體產業簡介EEC116 |  |  | 光子學導論EEC301 | 🞿光學設計導論EEC213**光學設計EEC511** | 發光二極體原理與應用EEC540 | 生醫光電原理與運用EEC412 |
| 電子電機概論EEC115 | 量子電腦與量子計算EEC117 |  |  | 工程光學實驗(1學分)EEC328 | 🞿傅立葉光學EEC514 | 節能照明EEC419 | 無人商店感測技術EEC424 |
|  |  |  |  | 傅立葉變換及其應用EEC312 | 🞿半導體元件物理EEC307**半導體元件****EEC531** | 非成像系統與實作EEC422 |  |
|  |  |  |  | 感測器與其應用EEC329 | 🞿光纖導論EEC303**光纖系統設計EEC504** | 有機光電半導體導論EEC417 |  |
|  |  |  |  | 🞿光電半導體物理導論EEC319**半導體物理****EEC503** | 光電工程實作(2學分)EEC330 | 🞿太陽能光電導論EEC416**太陽能光電元件EEC541** |  |
|  |  |  |  | 🞿液晶顯示器之基礎原理EEC311**液晶顯示器原理****EEC532** |  | 人工智慧與影像辨識EEC425 |  |
| 備註Remarks | 1. 必選修課程：電磁學(二) (EEC308)

Course requirement: Electromagnetics (II)1. 未特別註明學分數之科目皆為3學分

Those courses without specific marking are worth 3 credit hours.1. 本組規劃有兩個學程，其必選修科目如下：

●「半導體暨綠能」學程：必修：近代物理（一）(EEC305)、光電元件製程(EEC407)、半導體物理(EEC503)、發光二極體原理與應用(EEC540)、太陽能光電元件(EEC541)。選修：液晶顯示器之基礎原理(EEC311)、固態物理導論(EEC408)、新興平面顯示器原理與技術導論(EEC411)、色度學(EEC414)、有機光電半導體導論(EEC417)、節能照明(EEC419)、液晶顯示光學(EEC519)、半導體元件(原半導體元件物理)( EEC531)、前瞻光電元件導論(EEC549)、薄膜工程(EEC551)，其中選修科目需任選二門以上。●「光機電系統與光資訊」學程必修：光學設計導論(EEC213)、光子學導論(EEC301)、光電與產業(EEC313)、雷射導論(EEC404)。選修：電磁學（二）(EEC308)、傅立葉變換及其應用(EEC312)、光電程式設計(EEC321)、色彩與影像處理(EEC322)、嵌入式系統之光電應用(EEC323)、工程光學實驗(EEC328)、感測器與其應用(EEC329)、色度學(EEC414)、光電量測系統導論(EEC418)、非成像系統設計與實作(EEC422)、人工智慧與影像辨識(EEC425)、傅立葉光學(EEC514)、影像檢測技術(EEC523)、機器學習與其應用(EEC561)，其中選修科目需任選三門以上。🞿研究所與大學部合開課程（以開設研究所課程開放大學部選修為原則）4.為增進學生英文能力，鼓勵選修英語授課課程(含英專班)，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 (including  English Bachelor), which courses and credits waiver and transference should be standardized by each department. |

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