**元智大學 工程學院英語學士班 必修科目表
International Bachelor Program in Engineering at Yuan Ze University**

**List of Compulsory Courses**

**（113學年度入學新生適用）**

**（Applicable to Newly-Admitted Students of 2024.）**

113.05.01 一一二學年度第八次教務會議通過

Passed by the 8th Academic Affairs Meeting, Academic Year 2023, on May 01, 2024

113.06.05 一一二學年度第九次教務會議修訂通過

Amended by the 9th Academic Affairs Meeting, Academic Year 2023, on June 05, 2024

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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」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）。
8. The undergraduate students must complete 10 required credits of foreign language courses.
9. 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.
10. 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.
11. 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.
12. “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.
13. Foreign students need approval by ILCC for taking 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.
14. 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。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：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。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. 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. |
| 院必修科目CollegeCompulsory（4） | 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) |
| 必修科目Department Compulsory (41)★ | 微積分(一)Calculus (I)DE101(3)★ | 微積分(二)Calculus (II)DE102 (3)★ | 應用統計Applied StatisticsDE206 (3) ★ | 工程專題討論(一)Special Topics in Engineering (I) DE201(2)★ |  | 工程專題討論(二)Special Topics in Engineering (II)DE301(2)★ |  |  |
| 基礎程式設計實驗(一)Computer Programming Lab.(I)DE103(1)★ | 基礎程式設計實驗(二)Computer Programming Lab.(II)DE104(1)★ |  | 綠色人因與永續工程Green Ergonomics & Sustainable Manufacturing DE207(3)★ |  |  |  |  |
| 化工與材科概論Introduction to Chemical Engineering & Materials Science DE105(3)★ | 普通物理General PhysicsDE108(3)★ |  | 實驗設計Experimental DesignDE204(3)★ |  |  |  |  |
| 工業工程概論Introduction to Industrial EngineeringDE106(3)★ | 機械工程概論Introduction to Mechanical EngineeringDE110(3)★ |  |  |  |  |  |  |
| 普通化學General ChemistryDE107(3)★ | 生技與生醫概論Introduction to Biotechnology and Biomedicine DE111(3)★ |  |  |  |  |  |  |
| 工程圖學Engineering DrawingDE211 (2)★ |  |  |  |  |  |  |  |
| 學期學分小計Credit each semester | 15 | 13 | 3 | 8 | - | 2 | - | - |
| 備註Remarks | 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。

Please refer to Yuan Ze University Common Required Course List for General Education courses information and regulations.1. 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.
2. 英語授課課程以「★」表示，包含程式語言4學分、通識教育科目10學分、必修科目41學分及領域必修24-38學分。

「★」：The credits granted by English-taught courses include 4 credits from Computer Programming, 10 credits from General Education, 41 credits from the department required courses and 24 to 38 credits from the program required courses1. 本班必修課程初次修課須在本學程修讀始予承認。

The compulsory courses have to be taken from the International Bachelor Program in Engineering for the first time.1. 本班同學須自「機械工程」、「化學工程與材料科學」及「工業工程與管理」三個領域中選擇「主修學程」(三選一)或「雙專長學程」(三選二)，並修滿128學分方可畢業。

Students must choose one major as a「single major」from three fields (i.e., Department of Mechanical Engineering, Department of Chemical Engineering and Materials Science, and Department of Industrial Engineering and Management) or complete two sets of these three fields as a 「double major」. Minimum credits for graduation: 128 credits.「主修學程」領域必修/選修科目請參見附表一。(Annex I-「single major」List of Required and Elective Courses)「雙專長學程」領域必修/選修科目請參見附表二。(Annex II-「double major」List of Required and Elective Courses)1. 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.1. 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

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.1. 赴本班所簽訂境外大學修讀雙學位之學生，得申請非本班修讀之必修學分抵免，至多12學分，並於修課前提出。Students pursuing a dual degree program at an overseas university partnered with our program may apply for a maximum of 12 credits of exemption for required courses taken outside our program, and submit an application before enrolling in

the courses.1. 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. |

**【附表一】：「主修學程」領域必修科目表**

**主修學程：機械工程**

**Single major: Mechanical Engineering**

| 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 |
| 必修科目CompulsoryCourses(27) |  |  | 工程數學(一)Engineering Mathematics(I)DE212 (3)★ | 工程數學(二)Engineering Mathematics(II)DE217 (3)★ | 機械設計(一)Mechanical Design(I)DE311(3)★ | 機動學MechanismsDE313 (3)★ |   |  |
|  |  | 熱力學(一)Thermodynamics (I)DE213 (3)★ | 材料力學Mechanics of MaterialsDE218 (3)★ | 流體力學Fluid MechanicsDE312 (3)★ | 自動控制Automatic ControlDE314 (3)★ |  |  |
|  |  | 應用力學-靜力Applied Mechanics StaticsDE219(~~3~~2)★ |  |  | 專題研究(一) Research Project (I) DE315 (1) ★ |  |  |
| 學期學分小計Credit each semester | - | - | 9 | 6 | 6 | 7 | 0 | - |
| 備註Remarks | 1. 英語授課課程以「★」表示。「★」shows the course is taught in English.
2. 選修應至少修畢選修科目表課程共計18學分。Students must complete 15 credits for professional elective courses of the program.
3. 本專長終端學習課程：「機械設計(一)」(DE311)。

The experiential learning course：“Mechanical Design (I) “ (DE311).1. 「機械設計(一)」(DE311)課程為本專長必修「議題導向實作專題課程」3學分。

“Mechanical Design (I) ” (DE311) is a compulsory three-credit course of "Topic and Implementation-oriented courses".1. 畢業前須修習至少2門「數位應用相關課程」(可於本班或外系修習) 【本專長「數位應用相關課程｣包括：機械畫(DE214)、電腦輔助分析(ME318)、電腦機械繪圖(ME444)、數值分析(ME345)及應力分析實務(ME476)，】

Mechanical Drawing DE214 (2)**,** Computer-Aided Engineering Analysis (ME318),Computer-Aided Drafting ME444(3), Numerical Analysis ME345 (3) , Practice of Stress Analysis ME476 (3)  are courses of 'digital application courses'. Students are required to take at least two 'digital application courses'. (Student may take 'digital application courses' from another department.) |

**主修學程：化學工程與材料科學**

**Single major: Chemical Engineering and Materials Science**

| 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 |
| 必修科目CompulsoryCourses(30) |  |  | 工程數學(一)Engineering Mathematics(I)DE212 (3)★ | 輸送現象與單元操作(一)Transport Phenomena and Unit Operations (I) DE235 (3)★ | 輸送現象與單元操作(二)Transport Phenomena and Unit Operations (II) DE331 (3)★ | 化學反應工程Chemical Reaction Engineering DE332 (3)★ | 創新工程系統與元件設計Innovative Engineering System and Component DesignDE431 (3)★ |  |
|  |  | 有機化學(一)Organic Chemistry (I)DE232 (3)★ | 材料科學Materials ScienceDE121 (3)★ |  |  |  |  |
|  |  | 物理化學(一)Physical Chemistry (I)DE233 (3)★ | 物理化學(二)Physical Chemistry (II)DE236 (3)★ |  |  |  |  |
|  |  | 質能均衡Material & Energy BalanceDE234 (3)★ |  |  |  |  |  |
| 學期學分小計Credit each semester |  |  | 12 | 9 | 3 | 3 | **3** |  |
| 備註Remarks | 1. 選修科目至少應選修15學分(含)以上，且此15學分均要求及格。

Complete (Pass) a minimum of 15 credit hours of the elective courses. 1. 英語授課課程以「★」表示。「★」shows the course is taught in English.
2. 終端學習課程：「創新工程系統與元件設計」(DE431)。

The experiential learning course：“Innovative Engineering System and Component Design” (DE431)1. 「創新工程系統與元件設計」課程(DE431)為本專長必修「議題導向實作專題課程」3學分。

“Innovative Engineering System and Component Design” (DE431) is a compulsory three-credit course of "Topic and Implementation-oriented courses".1. 畢業前須修習至少2門「數位應用相關課程」(可於本班或外系修習) 【本專長「數位應用相關課程｣包括：「材料科學」(DE121)、「創新工程系統與元件設計」 (DE431) 。】

“Materials Science” (DE121) and “Innovative Engineering System and Component Design” (DE431) are courses of 'digital application courses'. Students require passing at least two 'digital application courses'. (Student may take 'digital application courses' from another department.) |

**主修學程：工業工程與管理**

**Single major: Industrial Engineering and Management**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 |
| 必修科目CompulsoryCourses (24) |  |  | 人因工程(一) Human Factors(I)DE251(3)★ | 線性代數Linear AlgebraDE253(3)★ | 作業研究(一) Operations Research(I)DE351 (3)★ | 作業研究(二) Operations Research(II)DE352 (3)★ | 畢業專題(一)Graduation Project(I)DE451(3)★ | 畢業專題(二) Graduation Project(II)DE452(3)★ |
|  |  | 生產計劃與管制(一) Production Planning and Control(I)DE353 (3)★ | 生產計劃與管制(含實驗)(二) Production Planning and Control(II)DE354 (3)★ |  |  |  |  |
| 學期學分小計Credit each semester | - | - | 6 | 6 | 3 | 3 | 3 | 3 |
| 備註Remarks | 1. 選修應至少修畢選修科目表課程共計21學分。

Elective courses should be completed the professional elective courses at least of 20 credits. 1. 英語授課課程以「★」表示。「★」shows the course is taught in English.
2. 終端學習課程：畢業專題(一)、畢業專題(二) 。

The experiential learning courses：”Graduation Project(I)、(II)".1. 人因工程(一) (DE251)課程為本專長必修「議題導向實作專題課程」3學分。

“Human Factors (I) “(DE251) is a compulsory three-credit course of "Topic and Implementation-oriented courses".1. 畢業前須修習至少2門「數位應用相關課程」(可於本班或外系修習) 【本專長「數位應用相關課程｣包括：網路資訊應用課程(IE212)、系統模擬與應用(IE247)】

Network Information Application (IE212) and System Simulation and Applications (IE247) are courses of 'digital application courses'. Students require passing at least two 'digital application courses'. (Student may take 'digital application courses' from another department.) |

**【附表二】：「雙專長」領域必修科目表**

**雙專長：機械工程**

**Double major: Mechanical Engineering**

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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 |
| 必修科目CompulsoryCourses(20) |  |  | 熱力學(一)ThermodynamicsDE213 (I) (3)★ |  | 機械設計(一)Mechanical Design(I)DE311 (3)★ | 機動學MechanismsDE313 (3)★ |  |  |
|  |  | 工程數學(一)Engineering Mathematics(I)DE212 (3)★ |  | 流體力學Fluid MechanicsDE312 (3)★ | 自動控制Automatic ControlDE314 (3)★ |  |  |
|  |  | 應用力學-靜力Applied Mechanics Statics DE219(~~3~~2)★ |  |  |  |  |  |
| 學期學分小計Credit each semester | - | - | 9 | - | 6 | 6 | 0 | - |
| 備註Remarks | 1. 選修應至少修畢專長選修科目表課程共計7學分。

Students must complete 7 credits for professional elective courses of the program. 1. 英語授課課程以「★」表示。「★」shows the course is taught in English.
2. 本專長終端學習課程：「機械設計(一)」(DE311)。

The experiential learning course：“Mechanical Design I“ (DE311).1. 「機械設計(一)」(DE311)課程為本專長必修「議題導向實作專題課程」3學分。

“Mechanical Design (I) ” (DE311) is a compulsory three-credit course of "Topic and Implementation-oriented courses".1. 畢業前須修習至少2門「數位應用相關課程」(可於本班或外系修習) 【本專長「數位應用相關課程｣包括：機械畫(DE214)、電腦輔助分析(ME318)、電腦機械繪圖(ME444)、數值分析(ME345)及應力分析實務(ME476)。】

Mechanical Drawing DE214 (2)**,** Computer-Aided Engineering Analysis (ME318),Computer-Aided Drafting ME444(3), Numerical Analysis ME345 (3) , Practice of Stress Analysis ME476 (3)  are courses of 'digital application courses'. Students are required to take at least two 'digital application courses'. (Student may take 'digital application courses' from another department.) |

**雙專長：化學工程與材料科學**

**Double major: Chemical Engineering and Materials Science**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 |
| 必修科目CompulsoryCourses (18) |  |  | 物理化學(一)Physical Chemistry (I)DE233 (3)★ | 物理化學(二)Physical Chemistry (II)DE236 (3)★ |  | 化學反應工程Chemical Reaction Engineering DE332 (3)★ | 創新工程系統與元件設計Innovative Engineering System and Component DesignDE431 (3)★ |  |
|  |  | 質能均衡Material & Energy BalanceDE234 (3)★ | 材料科學Materials ScienceDE121 (3)★ |  |  |  |  |
| 學期學分小計Credit each semester | - | - | **6** | **6** |  | **3** | **3** | **-** |
| 備註Remarks | 1. 選修科目至少應選修9學分(含)以上，且此9學分均要求及格。

Complete (Pass) a minimum of 9 credit hours of the elective courses. 1. 英語授課課程以「★」表示。「★」shows the course is taught in English.
2. 終端學習課程：「創新工程系統與元件設計」(DE431)。

The experiential learning courses：“Innovative Engineering System and Component Design” (DE431)1. 「創新工程系統與元件設計」課程(DE431)為本專長必修「議題導向實作專題課程」3學分.

“Innovative Engineering System and Component Design” (DE431) is a compulsory three-credit course of "Topic and Implementation-oriented courses".1. 畢業前須修習至少2門「數位應用相關課程」(可於本班或外系修習) 【本專長「數位應用相關課程｣包括：「材料科學」(DE121)、「創新工程系統與元件設計」(DE431)】

“Materials Science” (DE121) and “Innovative Engineering System and Component Design” (DE431) are courses of 'digital application courses'. Students require passing at least two 'digital application courses'. (Student may take 'digital application courses' from another department.) |

**雙專長：工業工程與管理**

**Double major: Industrial Engineering and Management**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 |
| 必修科目CompulsoryCourses(15) |  |  | 人因工程(一) Human Factors(I)DE251 (3)★ | 線性代數Linear AlgebraDE253(3)★ | 作業研究(一)Operations Research(I)DE351 (3)★ |  | 畢業專題(一) Graduation Project(I)DE451 (3)★ |  |
|  |  | 生產計劃與管制(一) Production Planning and Control(I)DE353 (3)★ |  |  |  |  |  |
| 學期學分小計Credit each semester | - | - | 6 | 3 | 3 | - | 3 | - |
| 備註Remarks | 1. 選修應至少修畢選修科目表課程共計13學分。

Elective courses should be completed the professional elective courses at least of 13 credits. 1. 英語授課課程以「★」表示。「★」shows the course is taught in English.
2. 終端學習課程：畢業專題(一)。

The experiential learning courses：”Graduation Project(I) ".1. 人因工程(一) (DE251)課程為本專長必修「議題導向實作專題課程」3學分。

“Human Factors (I) “(DE251) is a compulsory three-credit course of "Topic and Implementation-oriented courses".1. 畢業前須修習至少2門「數位應用相關課程」(可於本班或外系修習) 【本專長「數位應用相關課程｣包括：網路資訊應用課程(IE212)、系統模擬與應用(IE247)。】

Network Information Application (IE212) and System Simulation and Applications (IE247) are courses of 'digital application courses'. Students require passing at least two 'digital application courses'. (Student may take 'digital application courses' from another department.) |

**【附表三】：單專長各領域共同選修科目表**

| 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 |
| 機械領域 | 工場實習(一)Workshop Practice (I)ME125(1) |  工場實習(二)Workshop Practice (II)ME126(1) | 機械製造Introduction to Manufacturing ProcessesME303 (3) | 工程材料Engineering MaterialsME115(3) | 應用力學-動力Applied Mechanics DynamicsME214(3) | 機械設計(二)Mechanical Design(II)ME310(3) ★ | 可程式控制Sequential Programmable ControlME415 (3) | 太陽能電池Solar CellME486 (3) |
|  |  |  | 熱力學(二)Thermodynamics(II)ME210(3) | 電路及電子學Introduction to Electric Circuits and ElectronicsME224(3 | 熱傳學Heat TransferME322(3) ★ | 半年專業實習Advanced Field StudyME453 (6) | 機電整合Mechatronics IntegrationME411(3 |
|  |  |  | 材料科學Materials ScienceDE121(3)★ME205(2) | 數值分析Numerical AnalysisME345(3) | 機械系統分析Analysis of Mechanical SystemME386 (3) | 專利分析Patent AnalysisME478 (3) | 應力分析實務Practice of Stress Analysis ME476(3) |
|  |  |  | 電腦機械繪圖Computer-Aided DraftingME444(3)  | 綠色能源專題實作Projects for Green EnergyME387(3) ★ | 電腦輔助分析Computer-Aided Engineering AnalysisME318(3) | 感測器原理與應用Sensor Principles and ApplicationsME385 (3) | 微機電製程與設備概論Introduction of the Micro Electro Mechanical Systems: Processes and FacilitiesME471(3) |
|  |  |  | 機械畫Mechanical DrawingME475(2) |  | 自動化機械設計Machine Design PracticeME441(3) |  |  |
| 化材領域 |  |  | 普通化學暨分析實驗General Chemistry & Analysis LaboratoryCH105 (1) | 有機化學(二)Organic Chemistry (II)CH231(3) | 應用生物化學Applied Biochemistry CH344(3) | 高分子加工Polymer ProcessingCH420(3) | 應用電化學Applied ElectrochemistryCH456(3) |
|  |  |  | 工程數學(二)Engineering Mathematics (II)DE217 (3)★CH233(3) | 專題研究(一)Research Project (I)CH335(1) ★ | 材料分析技術與應用Technique and Applications of Material AnalysisCH451(3) | 產品與程序設計Product and process designCH402 (3) |
|  |  |  | 計算機程式(一)Computer Programming (1)CH115 (3)  | 物理化學與材料實驗Physical Chemistry & Materials LaboratoryCH227 (1) |  |  |
|  |  |  | 電子材料概論Introduction to Electronic MaterialCH222(3) | 化工熱力學Chemical Engineering Thermodynamics CH304(3)  | 輸送現象與單元操作（三）Transport Phenomena and Unit Operations(III) CH302(3) |  |  |
|  |  |  | 無機化學Inorganic ChemistryCH345(3) | 高分子物性Polymer PhysicsCH 336(3) | 生物材料BiomaterialsCH461(3) |  |  |
|  |  |  |  | 光電概論Introduction to Opto-ElectronicsCH346(3) | 無機材料Inorganic MaterialsCH448 (3) |  |  |
|  |   |  |  | 尖端能源技術Sustainable Energy TechnologiesCH465 (3) |  |  |  |
|  |  |  |  | 複合材料Composite MaterialsCH421(3) |  |  |  |
| 工管領域 |  |  | 問題創意思解Creative Problem SolvingIE232 (2) | 工作研究Work StudyIE211 (3) | 品質管制(含實驗) Quality Control (Lab)IE350 (3) | 研究方法Research MethodologyIE233 (2) |  |  |
|  |  |  | 網路資訊應用Network Information ApplicationIE212 (3) | 專案管理Project ManagementIE375 (3) | 設施規劃(含實驗) Facilities PlanningIE349 (3) |  |  |
|  |  |  | 工程溝通與倫理Engineering Communications and EthicsIE238(2) |  | 應用統計分析Applied Statistical AnalysisIE304 (3) |  |  |
|  |  |  | 工程統計（二）Engineering StatisticsIE204 (3) |  | 物料管理Material ManagementIE322 (3) |  |  |
|  |  |  | 系統模擬與應用System Simulation and ApplicationsIE247(3) |  |  |  |  |
|  |  |  | 服務工程Service EngineeringIE245(3) |  |  |  |  |
| 英文領域 | 科技英文會話Science and Technology English Conversation (2) EI111★ | 科技英文導讀Science and Technology English Reading(2)EI112★ | 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★ |   |  |  |  |
|  |   | 學術英文Academic EnglishDE205(3) ★ |  |   |  |  |  |
|  |  | 科技英文閱讀與報告Technical Reading and ReportDE302(3)★ |  |  |  |  |  |
| 其他 | 資訊概論Introduction to Computer ScienceIN102(3) ★ |  |  |  |  |  |  |  |
| 智慧財產權Intellectual PropertyIN104(3) ★ |  |  |  |  |  |  |  |
| 企業倫理與社會責任Business Ethics and Community ResponsibilityCM114（3）★ |  |  |  |  |  |  |  |

**【附表四】：雙專長各領域共同選修科目表**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 |
| 機械領域 | 工場實習(一)Workshop Practice (I)ME125(1) |  工場實習(二)Workshop Practice (II)ME126(1) | 機械製造Introduction to Manufacturing ProcessesME303 (3) | 熱力學(二)Thermodynamics(II)ME210(3) | 應用力學-動力Applied Mechanics DynamicsME214(3) | 機械設計(二)Mechanical Design (II)ME310(3)★ | 半年專業實習Advanced Field StudyME453(6) | 應力分析實務Practice of Stress AnalysisME476(3) |
|  |  |  | 材料力學Mechanics of MaterialsDE218 (3)★ME309(3) | 電路及電子學Introduction to Electric Circuits and ElectronicsME224(3) | 機械系統分析Analysis of Mechanical SystemME386 (3) | 可程式控制Sequential Programmable ControlME415 (3) | 機電整合Mechatronics IntegrationME411(3) |
|  |  |  | 機械畫Mechanical DrawingME475 (2) | 數值分析Numerical AnalysisME345(3) | 電腦輔助分析Computer-Aided Engineering AnalysisME318(3) | 自動化機械設計Machine Design PracticeME441(3) |  |
|  |  |  | 工程材料Engineering MaterialsME115(3) | 綠色能源專題實作Projects for Green EnergyME387(3) ★ | 專題研究(一) Research Project (I) DE315 (1) ★ | 專利分析Patent AnalysisME478 (3) |  |
|  |  |  |  | 電腦機械繪圖Computer-Aided DraftingME444(3)  |  |  |  |
| 化材領域 |  |  | 普通化學暨分析實驗General Chemistry & Analysis LaboratoryCH105 (1) | 有機化學(二)Organic Chemistry (II)CH231(3) | 應用生物化學Applied Biochemistry CH344(3) | 高分子加工Polymer ProcessingCH420(3) | 產品與程序設計Product and process designCH402 (3) |
|  |  |  | 計算機程式(一)Computer Programming (1)CH115 (3)  | 高分子物性Polymer PhysicsCH 336(3) | 複合材料Composite MaterialsCH421(3) |  | 應用電化學Applied ElectrochemistryCH456(3) |
|  |  |  | 電子材料概論Introduction to Electronic MaterialCH222(3) | 光電概論Introduction to Opto-ElectronicsCH346(3) | 生物材料BiomaterialsCH461(3) |  |  |
|  |  |  |  | 尖端能源技術Sustainable Energy TechnologiesCH465 (3) | 無機材料Inorganic MaterialsCH448 (3) |  |  |
|  |  |  | 無機化學Inorganic ChemistryCH345(3) | 化工熱力學Chemical Engineering Thermodynamics CH304(3) | 材料分析技術與應用Technique and Applications of Material AnalysisCH451(3) |  |  |
|  |  |  |  | 專題研究(一)Research Project (I)CH335(1) ★ | 物理化學與材料實驗Physical Chemistry & Materials LaboratoryCH227 (1) |  |  |
|  |  |  | 工程數學(二)Engineering Mathematics (II)DE217 (3)★CH233(3) |  | 輸送現象與單元操作（三）Transport Phenomena and Unit Operations(III) CH302(3) |  |  |
| 工管領域 |  |  | 網路資訊應用Network Information ApplicationIE212 (3) | 專案管理Project ManagementIE375 (3) | 品質管制(含實驗) Quality Control (Lab)IE350 (3) | 作業研究(二) Operations Research(II)DE352 (3)★IE329(3) |  |  |
|  |  | 工程溝通與倫理Engineering Communications and EthicsIE238(2) |  |  | 研究方法Research MethodologyIE233 (2) |  |  |
|  |  | 工程統計（二）Engineering StatisticsIE204 (3) |  |  | 設施規劃(含實驗) Facilities PlanningIE349 (3) |  |  |
|  |  | 系統模擬與應用System Simulation and ApplicationsIE247(3) |  |  | 應用統計分析Applied Statistical AnalysisIE304 (3) |  |  |
|  |  | 服務工程Service EngineeringIE245(3) |  |  | 物料管理Material ManagementIE322(3) |  |  |
|  |  | 生產計劃與管制(含實驗)(二) Production Planning and Control(II)DE354 (3)★IE348(3) |  |  |  |  |  |
|  |  | 工作研究Work StudyIE211 (3) |  |  |  |  |  |
|  |  | 問題創意思解Creative Problem SolvingIE232 (2) |  |  |  |  |  |
| 英文領域 | 科技英文會話Science and Technology English Conversation EI111(2)★ | 科技英文導讀Science and Technology English ReadingEI112(2)★ | 科技英文閱讀與報告Technical Reading and ReportDE302(3)★ | 科技英文簡報Science and Technology English PresentationEI210(2)★ |  |  |  |  |
|  |  | 學術英文Academic EnglishDE205(3) ★ |  |  |  |  |  |
|  |  | 科技英文寫作Science and Technology English WritingEI209(2)★ |  |  |  |  |  |
| 其他 | 資訊概論Introduction to Computer ScienceIN102(3) ★ |  |  |  |  |  |  |  |
| 智慧財產權Intellectual PropertyIN104(3) ★ |  |  |  |  |  |  |  |
| 企業倫理與社會責任Business Ethics and Community ResponsibilityCM114（3）★ |  |  |  |  |  |  |  |