**元智大學 機械工程學系 必修科目表**

**Department of Mechanical Engineering, Yuan Ze University**

**List of Required Courses**

**（111學年度入學新生適用）**

**(Applicable to Students Admitted in Academic Year of 2022)**

111.04.20 一一○學年度第六次教務會議通過

Passed 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  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。   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，畢業前應修畢三個不同主題式英語課程，共三學期5學分。 3. 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。 4. 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.   1. 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. 2. 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. 3. 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. 4. “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。惟外籍生可於四大領域中選課。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 are required to take a 2-credit course from the four categories | | | | | | | | | | | | | | | |
| 必修科目  Department Compulsory  (71**)** | 微積分  Calculus  ME120(3) | 微積分  Calculus  ME120(3) | | 工程數學(一)  Engineering Mathematics (I)  ME202(3) | | 工程數學(二)  Engineering Mathematics (II)  ME204(3) | | | 機械設計(一)  Mechanical Design (I)  ME306(3) | | 機械設計(二)  Mechanical Design (II)  ME310(3) | ~~(3選1課程)~~ ~~註7~~  ~~暑期專業實習~~  ~~Summer Internship ME477(0)~~  ~~學士論文~~  ~~Bachelor Thesis ME479(0)~~  ~~半年專業實習~~  ~~Advanced Field Study ME453(6)~~  ~~(Remarks #7)~~ | | | |  |
| 基礎程式設計實驗(一)  ME123(1) | 基礎程式設計實驗(二)  ME124(1) | | 熱力學(一)  Thermodynamics(I)  ME206(3) | | 熱力學(二)  Thermodynamics (II)  ME210(3) | | | 流體力學  Fluid Mechanics  ME305(3) | | 熱傳學  Heat Transfer  ME322(3) |  |
| 工程圖學  Engineering Drawing  ME119(2) | 工程材料  Engineering Materials  ME115(3) | | 應用力學-動力  Applied Mechanics Dynamics  ME214(3) | | 機動學  Mechanisms  ME207(3) | | | ~~(2選1課程)~~  ~~近代生物學導論~~  ~~Introduction to Modern Biology ME114(3)~~  ~~or~~  ~~工業應用化學~~  ~~Applied Chemistry in Industry ME229(3)~~ | | 專題研究(一)  Research Project (I) ME311(1) | ~~議題導向實作專題課程~~~~註10~~  ~~Topic and Implementation-oriented courses(3)~~  ~~(Remarks #10)~~ | | | |  |
| 機械工程概論  Introduction to Mechanical Engineering  ME121(3) | 材料力學  Mechanics of Materials  ME309(3) | | 機械製造  Introduction to Manufacturing Processes  ME303(3) | | 自動控制  Automatic Control  ME335(3) | | |  |  |
| 工場實習  Workshop Practice  ME215(1) | 工場實習  Workshop Practice  ME215(1) | | 電路及電子學  Introduction to Electric Circuits and Electronics ME224(3) | |  | | | 機械工程實驗  (一)  Mechanical Engineering Lab. (I)  ME307(1) | | 機械工程實驗(二)  Mechanical Engineering Lab. (II)  ME308(1) |  | | | |  |
| 應用力學-靜力  Applied Mechanics Statics  ME108(3) | 機械畫  Mechanical Drawing  ME475(2) | |  | |  | | |  | |  |  | | | |  |
|  | 普通物理  General Physics  ME117(3) | |  | | |  | | ~~5選3實驗課程~~  ~~實驗(一)~(五)各1學分Experiments from (I) to (V), at least choose three out of the five courses.~~ | | | | | | |  |
| 學期學分小計  Credit each semester | 13 | 16 | | 15 | | | 12 | | 7 | | 8 | | | 0 | | 0 |
| 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 course information and regulations.   1. 括弧內數字為學分數。Symbol “( )” shows the credits. 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 are 10, the exceeding credits will not be counted.   1. 本系同學總共必須修滿130學分方可畢業，包括共同必修及通識課程共31學分、本系必修71學分，其餘選修28學分（外系選修至多承認17學分）。   Student must take 130 credits in total for graduation, include Required Common Courses and General Education courses (31), Department Required courses (71), and Elective courses (28). (Outside the Department of elective up to recognize the 17 credits)   1. ~~實驗課程需5選3。【實驗(一)：材料與固力(ME348)；實驗(二)：流力與熱傳(ME349)；實驗(三)：生醫機械系統(ME350)；實驗(四)：量測與儀器(ME351)；實驗(五)：綠色能源(ME352)】。~~   ~~Experiments from (I) to (V), please at least choose three out of the five courses. (Exp (I) : Materials and Solid Mechanics ME348(1)；Exp (II) : Fluid Mechanics and Heat Transfer ME349(1)；Exp (III) : Biomechanical Systems ME350(1)；Exp (IV) : Measurement and Instrumentation ME351(1)；Exp (V) : Green Energy ME352(1) ).~~   1. ~~2選1必修：近代生物學導論(ME114)、工業應用化學(ME229)。~~   ~~For two courses of “Introduction to Modern Biology ME114(3)” and “Applied Chemistry in Industry ME229(3)”, please choose one course for the required courses credits.~~   1. ~~暑期專業實習(ME477, 0)、學士論文(ME479, 0)及半年專業實習(ME453, 6)課程需3選1，不限年級皆可修課。各課程修課規定請參閱機械工程學系專業實習及學士論文課程修課辦法。~~   ~~For these courses of “Summer Internship ME477(0) ”; “Bachelor Thesis ME479(0)” and “Advanced Field Study ME453(6)”, please choose one of the three courses for the required course credits. It’s not required for a grade. Please refer to the methodology of Professional Internships and Bachelor Thesis Courses in the Department of Mechanical Engineering.~~   1. 本系必修課程初次修課須在本系修讀始予承認。   The first compulsory courses have to be taken in department of Mechanical Engineering.   1. 三年級下學期「機械設計(二)」(ME310)為本系終端學習課程。   Mechanical Design (II) ME310 (3) is a experiential learning course.   1. 「ME306機械設計(一)」課程為本系必修「議題導向實作專題課程」3學分。   「ME306 Mechanical Design (I) is a compulsory three-credit course of "Topic and Implementation-oriented courses"  ~~「議題導向實作專題課程」：必修3學分(需7選1)【本系開設之課程包括機械系統分析(ME386)、綠色能源專題實作(ME387)、機電整合(ME411)、可程式控制(ME415)、自動化機械設計(ME441)、專利分析(ME478)及創新產品設計(ME610)】~~  ~~Analysis of Mechanical System ME386(3), Projects for Green Energy ME387(3), Mechatronics Integration ME411(3), Sequential Programmable Control ME415(3), Machine Design Practice ME441(3), Patent Analysis ME478(3), Innovative Product Design ME610(3) are courses of 'Topic and Implementation-oriented courses'. Please choose one course for the required course credits.~~   1. 「數位應用相關課程｣：畢業前須於本系或至外系修習至少2門數位應用相關課程【本系開設之課程包括機械畫(ME475)、電腦輔助分析(ME318)、電腦機械繪圖(ME444)、數值分析(ME345)、應力分析實務(ME476)、有限元素(ME517)、電腦輔助實務分析與應用(ME522) 】   Mechanical Drawing ME475(2)**,** Computer-Aided Engineering Analysis ME318(3), Computer-Aided Drafting ME444(3), Numerical Analysis ME345 (3)**,** Practice of Stress Analysis ME476(3)**,** Finite Element Method ME517(3) **,** Computer Aided Analysis for Mechanical Design ME522(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.)   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. | | | | | | | | | | | | | | | |

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**元智大學 機械工程學系 選修科目表**

**Department of Mechanical Engineering, Yuan Ze University**

**List of Elective Courses**

**（111學年度入學新生適用Academic Year 2022）**

111.04.20 一一○學年度第六次教務會議通過

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

111.06.01 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 2021, on June 01, 2022

111.12.28 一一一學年度第三次教務會議通過

Amended by the 3rd Academic Affairs Meeting, Academic Year 2022, on November 28, 2022

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

112.11.22 一一二學年度第五次教務會議修訂通過

Amended by the 5th Academic Affairs Meeting, Academic Year 2023, on November 22, 2023

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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 |
| 系  選  修  科  目  Elective Course |  |  | 材料科學  Material Science  ME205(2) |  | 數值控制加工  CNC Machining  ME324(3) | 電腦輔助分析  Computer-Aided Engineering Analysis  ME318(3) | 感測器原理與應用   Sensor Principles and Applications  ME385(3) | 熱處理學與  表面改質  Heat Treatment and Surface Modification  ME327(3) |
|  |  |  |  | 數值分析  Numerical Analysis ME345 (3) | 科技創業專題  Entrepreneurship of Technology Innovation  ME321(2) | 機械振動  Mechanical Vibrations ME407(3) | 人工智慧概論Introduction to Artificial Intelligence  ME384(3) |
|  |  |  |  | 綠色能源專題實作  Projects for Green Energy  ME387(3) | 線性代數  Linear Algebra ME342(3) | 可程式控制  Sequential Programmable Control  ME415(3) | 工廠管理  Production/Operation Management  ME396(3) |
|  |  |  |  | 藝術與設計創作(一) Art & Design Studio(I)  ME388(3) | 電池技術  Battery Technology E347(3) | 物理冶金學  Physical Metallurgy  ME424(3) | 機電整合  Mechatronics Integration  ME411(3) |
|  |  |  |  | 信號處理與  系統鑑別  Signal Processing and System Identification ME393(3) | 機械系統分析  Analysis of Mechanical System ME386(3) | 精密機械與量測Precision Engineering and Measurement  ME427(3) | 伺服控制系統Servo Control  ME422(3) |
|  |  |  |  | 電腦機械繪圖  Computer-Aided Drafting  ME444(3) | 機械職能與關鍵就業力  Competencies and Key Employability Skills of Mechanical Engineers  ME383(3) | 自動化機械設計  Machine Design Practice  ME441(3) | 內燃機學  Internal Combustion Engine  ME448(3) |
|  |  |  |  | 汽車學  Automotive Engineering  ME470(3) |  | 流體機械  Fluid Machinery  ME442(3) | 空氣動力學  Aerodynamics ME457(3) |
|  |  |  |  | 近代生物學導論  Introduction to Modern Biology ME114(3) | 工業應用化學  Applied Chemistry in Industry  ME229(3) | 科技英文  Technical English ME452(3) | 能源與環境  Energy and Environment  ME461(3) |
|  |  |  |  |  |  | 半年專業實習  Advanced Field Study ME453(6) | 電子構裝製程  與設備  Process and Equipment for Electronic Packaging ME462(3) |
|  |  |  |  |  |  | 能源工程  Energy Science and Technology  ME454 (3) | 材料破壞分析  Material Failure Analysis  ME463(3) |
|  |  |  |  |  |  | 微機電製程與  設備概論  Introduction of the Micro Electro Mechanical Systems: Processes and Facilities  ME471(3) | 微感應器設計與製造The Design and Manufacturing Processes of Micro Sensors  ME465(3) |
|  |  |  |  |  |  | 專利分析  Patent Analysis  ME478(3) | 應力分析實務Practice of Stress Analysis  ME476(3) |
|  |  |  |  |  |  | 材料之選擇與應用The Selection and Application of Materials  ME480(3) | 太陽能電池  Solar Cell  ME486(3) |
|  |  |  |  |  |  | 燃料電池概論Introduction to Fuel Cell Technology  ME483(3) | 老人福祉科技產業學堂專題講座Gerontechnplogy Industry School Seminar  ME491(1) |
|  |  |  |  |  |  | 材料機械行為  Mechanical Behavior of Materials  ME493(3) | 人因工程設計方法與實務  Ergonomics in Mechanical Design  ME492(3) |
|  |  |  |  |  |  | 氫能概論  Introduction to Hydrogen Energy  ME495(3) | 電腦輔助實務分析與應用  Computer Aided Analysis for Mechanical Design  ME522(3) |
|  |  |  |  |  |  | 有限元素法  Finite Element Method  ME517(3) | 創新產品設計  Innovative Product Design  ME610(3) |
|  |  |  |  |  |  | 半導體製程與設備概論  Introduction to Semiconductor Manufacturing and Equipment  ME487(3) | 半導體封裝技術概論Introduction to Semiconductor Packaging  ME488(3) |
|  |  |  |  |  |  | 臨床醫學中的機械運用  Machinery in Clinical Medicine  ME420(2) |  |
| 備註  Remarks |  | | | | | | | |

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