**元智大學 機械工程學系 必修科目表**

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

**List of Required Courses for the Undergraduate Program**

**（107學年度入學新生適用Academic Year 2018）**

107.05.02 一○六學年度第五次教務會議通過

Passed by the 5th Academic Affairs Meeting, Academic Year 2017, on May 2, 2018

107.06.27 一○六學年度第六次教務會議修訂通過

Amended by the 6th Academic Affairs Meeting, Academic Year 2017, on June 27, 2018

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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。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.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） | 體育Physical Education（0） | 體育Physical Education（0） |  |  |  |  |
| 體育除修習大一至大二4個學期外，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。Beside taking PE courses for 4 semesters (Year 1 to 2), students must pass both swimming and cardiopulmonary function tests. |
| 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。Students can select the 2 credits from a General Education Lecture course, Micro Credit courses, Self-Study courses, or Local-Multicultural courses. |
| 必修科目Department Compulsory (77**)** | 微積分CalculusME120(3) | 微積分CalculusME120(3) | 工程數學Engineering MathematicsME201(3) | 工程數學Engineering MathematicsME201(3) | 機械設計Mechanical DesignME301(3) | 機械設計Mechanical DesignME301(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ThermodynamicsME209(3) | 熱力學ThermodynamicsME209(3) | 電路及電子學Introduction to Electric Circuits and Electronics ME224(3) | 自動控制Automatic ControlME335(3) |   |
| 工程圖學Engineering DrawingME119(2) | 工程材料Engineering MaterialsME115(3) | 機械畫Mechanical DrawingME475(2) | 材料力學Mechanics of MaterialsME309(3) | 流體力學Fluid MechanicsME305(3) | 熱傳學Heat TransferME322(3) | 議題導向實作專題課程註11Topic and Implementation-oriented courses(3) (Remarks #11) |   |
| 機械工程概論Introduction to Mechanical EngineeringME121(3) | 應用力學-靜力Applied Mechanics StaticsME108(3) | 機械製造Introduction to Manufacturing ProcessesME303(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) | 應用力學-動力Applied Mechanics DynamicsME214(3) | 機動學MechanismsME207(3) |   |
| 工場實習Workshop PracticeME215(1) |  工場實習Workshop PracticeME215(1) | 普通物理General PhysicsME117(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 | 10 | 11 | 15 | 13 | 13 | 12 | 3 | 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77學分，其餘選修22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 (74), and Elective courses (22). (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. 應用力學-靜力(ME108)未達60分則擋修應用力學-動力(ME214)。

For “Applied Mechanics Statics ME108(3)”, if your scores is less than 60 points, you are not allowed to register “Applied Mechanics Dynamics ME214(3)”.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」(ME301)為本系終端學習課程。

Mechanical Design ME301(3) is a experiential learning course.1. 「議題導向實作專題課程」必修3學分(需7選1)【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｣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)、有限元素法(ME517)及電腦輔助實務分析與應用(ME522)，畢業前須修習至少2門「數位應用相關課程」(可至本系或外系修習)。

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.) |

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**元智大學 機械工程學系 選修科目表**

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

**List of Elective Courses for the Undergraduate Program**

**（107學年度入學新生適用Academic Year 2018）**

107.05.02 一○六學年度第五次教務會議通過

Passed by the 5th Academic Affairs Meeting, Academic Year 2017, on May 2, 2018

108.05.01 一○七學年度第六次教務會議修訂通過

Amended by the 6th Academic Affairs Meeting, Academic Year 2018, on May 01, 2019

109.11.11 一○九學年度第二次教務會議修訂通過

Amended by the 2nd Academic Affairs Meeting, Academic Year 2020, on November 11, 2020

110.11.24 一一○學年度第二次教務會議修訂通過

Amended by the 2nd Academic Affairs Meeting, Academic Year 2021, on November 24, 2021

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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 ScienceME205(2)  |   | 數值分析Numerical Analysis ME345 (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) | 熱處理學與表面改質Heat Treatment and Surface ModificationME327(3) |
|  |  |  |  | 綠色能源專題實作Projects for Green EnergyME387(3)  | 科技創業專題Entrepreneurship of Technology InnovationME321(2) | 機械振動Mechanical Vibrations ME407(3) | 人工智慧概論Introduction to Artificial IntelligenceME384(3) |
|   |   |  |   | 藝術與設計創作(一) Art & Design Studio(I)ME388(3) | 線性代數Linear Algebra ME342(3) | 可程式控制Sequential Programmable ControlME415(3) | 工廠管理Production/Operation ManagementME396(3) |
|   |   |   |   | 信號處理與系統鑑別Signal Processing and System Identification ME393(3) | 電池技術Battery Technology E347(3) | 物理冶金學Physical MetallurgyME424(3) | 機電整合Mechatronics IntegrationME411(3) |
|   |   |   |   | 電腦機械繪圖Computer-Aided DraftingME444(3)  | 機械系統分析Analysis of Mechanical System ME386(3) | 精密機械與量測Precision Engineering and MeasurementME427(3) | 伺服控制系統Servo ControlME422(3) |
|  |  |  |  | 數值控制加工CNC MachiningME324(3) | 汽車學Automotive EngineeringME470(3) | 自動化機械設計Machine Design PracticeME441(3) | 內燃機學Internal Combustion EngineME448(3)  |
|   |   |   |   |  |  | 流體機械Fluid MachineryME442(3) | 空氣動力學Aerodynamics ME457(3) |
|  |  |  |  |  |  | 科技英文Technical English ME452(3) | 能源與環境Energy and EnvironmentME461(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 TechnologyME454 (3) | 材料破壞分析Material Failure AnalysisME463(3) |
|   |   |   |   |   |  | 微機電製程與設備概論Introduction of the Micro Electro Mechanical Systems: Processes and FacilitiesME471(3) | 微感應器設計與製造The Design and Manufacturing Processes of Micro SensorsME465(3) |
|  |  |  |  |  |  | 專利分析Patent AnalysisME478(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 MaterialsME480(3) | 太陽能電池Solar CellME486(3) |
|   |   |   |   |   |  | 燃料電池概論Introduction to Fuel Cell TechnologyME483(3) | 老人福祉科技產業學堂專題講座Gerontechnplogy Industry School SeminarME491(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 DesignME492(3) |
|   |   |   |   |   |   | 氫能概論Introduction to Hydrogen EnergyME495(3) | 有限元素法Finite Element Method ME517(3) |
|   |   |   |   |   |   | 創新產品設計Innovative Product DesignME610(3) | 電腦輔助實務分析與應用Computer Aided Analysis for Mechanical DesignME522(3) |
|  |  |  |  |  |  |  | 非傳統加工Non-Traditional Manufacturing ProcessesME406(3) |
| 備註Remarks |  |

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