

國立勤益科技大學 113 學年度日間部四年制機械工程系學分計畫表
National Chin-Yi University of Technology
Curriculum for 2024 Four-Year Bachelor Program of Department of Mechanical Engineering

112.10.18 系課程及 112.11.08 系務會議審議通過
112.11.23 院課程會議審議通過
112.12.07 校課程委員會及 112.12.21 臨時教務會議審議通過
113.04.11 系課程及 113.04.17 系務會議修訂通過
113.5.14 院課程會議審議修訂通過
113.5.21 校課程委員會及 113.6.6 臨時教務會議審議修訂通過

| 科目 | Courses | 上學期 First Semester | | | 下學期 Second Semester | | |
|---|---|--------------------|---------------|----------------|---------------------|---------------|----------------|
| | | 學分 Credits | 正課 Lecture | 實習 Practice | 學分 Credits | 正課 Lecture | 實習 Practice |
| 共同必修科目(28 學分) General Required Courses (28credits) | | | | | | | |
| 第一學年 First Year | | | | | | | |
| 國文(一) | Chinese (I) | 2 | 2 | 0 | | | |
| 大一英文(一) | Freshman English (I) | 2 | 2 | 0 | | | |
| 英文聽講(一) | Listening and Speaking (I) | 1 | 1 | 0 | | | |
| 歷史與文化(一) | History and Culture (I) | 2 | 2 | 0 | | | |
| 音樂鑑賞 | Music Appreciation | 1 | 1 | 0 | | | |
| 體育(一) | Physical Education (I) | 0 | 2 | 0 | | | |
| 全民國防教育軍事訓練(一) | National Defense Education and Military Training (I) | 0 | 2 | 0 | | | |
| 國文(二) | Chinese (II) | | | | 2 | 2 | 0 |
| 大一英文(二) | Freshman English (II) | | | | 2 | 2 | 0 |
| 英文聽講(二) | Listening and Speaking (II) | | | | 1 | 1 | 0 |
| 歷史與文化(二) | History and Culture (II) | | | | 2 | 2 | 0 |
| 藝術鑑賞 | Art Appreciation | | | | 1 | 1 | 0 |
| 體育(二) | Physical Education (II) | | | | 0 | 2 | 0 |
| 全民國防教育軍事訓練(二) | National Defense Education and Military Training (II) | | | | 0 | 2 | 0 |
| 第二學年 Second Year | | | | | | | |
| 博雅通識課程 | Liberal Education | 2 | 2 | 0 | | | |
| 體育(三) | Physical Education (III) | 0 | 2 | 0 | | | |
| 博雅通識課程 | Liberal Education | | | | 2 | 2 | 0 |
| 博雅通識課程 | Liberal Education | | | | 2 | 2 | 0 |
| 體育(四) | Physical Education (IV) | | | | 0 | 2 | 0 |
| 第三學年 Third Year | | | | | | | |
| 博雅通識課程 | Liberal Education | 2 | 2 | 0 | | | |
| 博雅通識課程 | Liberal Education | | | | 2 | 2 | 0 |
| 憲法與民主 | Constitution and Democracy | | | | 2 | 2 | 0 |
| 第四學年 Fourth Year (無必修課程 No General Required Courses) | | | | | | | |
| 專業必修科目(62 學分) Department Required Courses (62credits) | | | | | | | |
| 第一學年 First Year | | | | | | | |
| 微積分(一) | Calculus (I) | 3 | 3 | 0 | | | |
| △程式語言 | Programming Language | 3 | 3 | 0 | | | |
| ●工廠實習 | Factory Practices | 1 | 0 | 3 | | | |
| ●電腦輔助機械製圖 | Computer Aided Mechanical Drawing | 1 | 0 | 3 | | | |
| 材料科學與工程 | Material Science and Engineering | 3 | 3 | 0 | | | |
| 微積分(二) | Calculus (II) | | | | 3 | 3 | 0 |
| ●精密製造實習 | Precision Manufacture Practices | | | | 1 | 0 | 3 |
| 靜力學 | Statics | | | | 3 | 3 | 0 |
| 製造學 | Manufacturing Processes | | | | 3 | 3 | 0 |
| 第二學年 Second Year | | | | | | | |
| 材料力學(一) | Mechanics of Materials (I) | 3 | 3 | 0 | | | |
| 工程數學(一) | Engineering Mathematics (I) | 3 | 3 | 0 | | | |
| 電機學 | Electrical Machinery | 3 | 3 | 0 | | | |
| 動力學(一) | Dynamics (I) | 3 | 3 | 0 | | | |
| 材料試驗 | Experiment of Engineering Material | 1 | 0 | 3 | | | |
| 機械工程實驗(一) | Experiment of Mechanical Engineering (I) | 1 | 0 | 3 | | | |
| 工程數學(二) | Engineering Mathematics (II) | | | | 3 | 3 | 0 |
| 應用電子學(一) | Applied Electronics (I) | | | | 3 | 3 | 0 |
| 機構學 | Mechanisms | | | | 3 | 3 | 0 |
| 熱力學(一) | Thermodynamics (I) | | | | 3 | 3 | 0 |
| 自動控制 | Automatic Controls | | | | 3 | 3 | 0 |
| 第三學年 Third Year | | | | | | | |
| 流體力學(一) | Fluid Mechanics (I) | 3 | 3 | 0 | | | |
| 機械設計(一) | Mechanical Design (I) | 3 | 3 | 0 | | | |
| 實務專題(一) | Project study (I) | 2 | 0 | 6 | | | |
| 機械工程實驗(二) | Experiment of Mechanical Engineering (II) | 1 | 0 | 3 | | | |
| 實務專題(二) | Project study (II) | | | | 2 | 0 | 6 |
| 機械工程實驗(三) | Experiment of Mechanical Engineering (III) | | | | 1 | 0 | 3 |
| 第四學年 Fourth Year (無必修課程 No Department Required Courses) | | | | | | | |

| 科目 | Courses | 上學期 First Semester | | | 下學期 Second Semester | | |
|---------------------------------------|---|--------------------|---------------|----------------|---------------------|---------------|----------------|
| | | 學分 Credits | 正課 Lecture | 實習 Practice | 學分 Credits | 正課 Lecture | 實習 Practice |
| 共同選修科目 General Electives Courses | | | | | | | |
| 第一學年 First Year (無排定共同選修課程 None) | | | | | | | |
| 第二學年 Second Year | | | | | | | |
| 全民國防教育軍事訓練(三) | National Defense Education and Military Training(III) | 1 | 2 | 0 | | | |
| 全民國防教育軍事訓練(四) | National Defense Education and Military Training (IV) | | | | 1 | 2 | 0 |
| 第三學年 Third Year | | | | | | | |
| 體育選修 | Physical Education, Elective Course | 1 | 2 | 0 | 1 | 2 | 0 |
| 全民國防教育軍事訓練(五) | National Defense Education and Military Training (V) | 1 | 2 | 0 | | | |
| 第四學年 Fourth Year | | | | | | | |
| 體育選修 | Physical Education, Elective Course | 1 | 2 | 0 | 1 | 2 | 0 |
| 專業選修科目 Professional Electives Courses | | | | | | | |
| 第一學年 First Year | | | | | | | |
| 物理學 | Physics | | | | 3 | 3 | 0 |
| 化學 | Chemistry | | | | 3 | 3 | 0 |
| 科技英文 | English for Science and Technology | | | | 3 | 3 | 0 |
| 第二學年 Second Year | | | | | | | |
| CAE 概論 | Introduction to CAE Analysis | 3 | 3 | 0 | | | |
| 3D 參數化機械設計 | 3D Parametric Mechanical Design | 3 | 3 | 0 | | | |
| ●CNC 加工(一) | CNC Machining (I) | 3 | 3 | 0 | | | |
| 奈米材料概論 | Introduction to Nanomaterials | 3 | 3 | 0 | | | |
| 科技論文導讀 | Guidance of Scientific Article Reading | | | | 3 | 3 | 0 |
| 幾何光學 | Geometric Optics | | | | 3 | 3 | 0 |
| 數位邏輯 | Digital logic | | | | 3 | 3 | 0 |
| ●CNC 加工(二) | CNC Machining (II) | | | | 3 | 3 | 0 |
| 電腦輔助立體製圖 | Three Dimensional Computer Graphics | | | | 3 | 3 | 0 |
| 第三學年 Third Year | | | | | | | |
| 工程材料與應用 | Engineering Material and Applications | 3 | 3 | 0 | | | |
| 訊號與系統 | Signals and Systems | 3 | 3 | 0 | | | |
| 應用熱傳學 | Applied Heat Transfer | 3 | 3 | 0 | | | |
| 材料力學(二) | Mechanics of Materials (II) | 3 | 3 | 0 | | | |
| 夾治具設計 | Jig and Fixture Design | 3 | 3 | 0 | | | |
| AI 智慧機械概論 | Introduction to Intelligent Machinery | 3 | 3 | 0 | | | |
| 衝壓模設計 | Stamping Die Design | 3 | 3 | 0 | | | |
| 銲接學 | Weldings | 3 | 3 | 0 | | | |
| 鑄造學 | Foundry | 3 | 3 | 0 | | | |
| ●精密加工技術 | Precision Machining | 3 | 3 | 0 | | | |
| 切削刀具學 | Tooling for Metal Cutting | 3 | 3 | 0 | | | |
| 工具機組裝技術 | Machine Tools Assembly Technology | 3 | 3 | 0 | | | |
| 塑膠材料 | Plastic Materials | 3 | 3 | 0 | | | |
| 快速原型加工 | Rapid Prototyping Processes | 3 | 3 | 0 | | | |
| 電腦輔助製造 | Computer Aided Manufacturing | 3 | 3 | 0 | | | |
| △C 程式語言設計 | Computer Programming C++ Language | 3 | 3 | 0 | | | |
| △LabVIEW 程式設計與應用 | LabVIEW Programming and Applications | 3 | 3 | 0 | | | |
| 變頻元件間流體 | VFD Elements and Thyristors | 3 | 3 | 0 | | | |
| 工程統計學 | Engineering Statistics | 3 | 3 | 0 | | | |
| 半導體製程 | Semiconductor Processing Technology | 3 | 3 | 0 | | | |
| 高等工程數學 | Advanced Engineering Mathematics | 3 | 3 | 0 | | | |
| 電腦輔助工程分析(一) | Computer Aided Engineering Analysis (I) | | | | 3 | 3 | 0 |
| 機器人控制實務 | Robot Control Practice | | | | 3 | 3 | 0 |
| 再生能源技術 | Technology and Application of Renewable Energy | | | | 3 | 3 | 0 |
| 動力學(二) | Dynamics (II) | | | | 3 | 3 | 0 |
| 創意性機構設計 | Creative Mechanism Design | | | | 3 | 3 | 0 |
| 流體力學(二) | Fluid Mechanics (II) | | | | 3 | 3 | 0 |
| 流體機械 | Fluid Machinery | | | | 3 | 3 | 0 |
| 電腦輔助產品設計 | Computer Aided Product Design | | | | 3 | 3 | 0 |
| 工具機設計與量測 | Machine Tool Design and Measurement | | | | 3 | 3 | 0 |
| 數值分析 | Numerical Analysis | | | | 3 | 3 | 0 |
| 有限元素分析 | Finite Element Analysis | | | | 3 | 3 | 0 |
| 向量與張量分析 | Vector and Tensor Analysis | | | | 3 | 3 | 0 |
| 逆向工程 | Reverse Engineering | | | | 3 | 3 | 0 |
| 精密鑄造 | Precision Casting | | | | 3 | 3 | 0 |
| 熱處理 | Heat Treatment | | | | 3 | 3 | 0 |
| 陶瓷材料 | Ceramic Materials | | | | 3 | 3 | 0 |
| 電腦輔助整合與應用 | Computer Aided Integration and Application | | | | 3 | 3 | 0 |
| 電腦整合製造 | Computer Integrated Manufacturing | | | | 3 | 3 | 0 |
| 塑膠模具設計 | Plastics Mold Design | | | | 3 | 3 | 0 |
| 板金彈性製造系統 | Flexible Manufacturing System of Sheet Metal Working | | | | 3 | 3 | 0 |

| | | | | | | | | |
|------------------|---|---|---|---|--|---|---|---|
| 五軸加工技術 | 5-Axis Machine Tool Technology and Application | | | | | 3 | 3 | 0 |
| 工具機結構分析 | Machine Tool Structural Analysis | | | | | 3 | 3 | 0 |
| 薄膜材料與應用 | Thin Film Materials and Applications | | | | | 3 | 3 | 0 |
| 真空技術 | Vacuum Technology | | | | | 3 | 3 | 0 |
| 塑性加工 | Plastic Processing | | | | | 3 | 3 | 0 |
| 電動車概論 | Introduction to Electric Vehicle | | | | | 3 | 3 | 0 |
| 感測器原理與應用 | Sensor Principle and Application | | | | | 3 | 3 | 0 |
| 機電整合 | Mechatronics and Integration | | | | | 3 | 3 | 0 |
| PC Based 控制 | PC Based Control Interface Techniques | | | | | 3 | 3 | 0 |
| 微控制器 | Microcontroller | | | | | 3 | 3 | 0 |
| 數位 IC 實務 | Digital IC Practices | | | | | 3 | 3 | 0 |
| 可靠度工程 | Introduction to Reliability Engineering | | | | | 3 | 3 | 0 |
| 線性代數 | Linear Algebra | | | | | 3 | 3 | 0 |
| 微成形概論 | Introduction to Microforming | | | | | 3 | 3 | 0 |
| MATLAB 軟體之工程應用 | Applications of MATLAB on Engineering | | | | | 3 | 3 | 0 |
| △Java 程式語言設計 | Java Programming | | | | | 3 | 3 | 0 |
| 半導體製程設備 | Semiconductor Equipment | | | | | 3 | 3 | 0 |
| 綠色能源科技 | Green Energy Technology | | | | | 3 | 3 | 0 |
| 近代物理 | Modern Physics | | | | | 3 | 3 | 0 |
| 第四學年 Fourth Year | | | | | | | | |
| 微機電系統 | Microelectromechanical Systems (MEMS) | 3 | 3 | 0 | | | | |
| 振動學 | Mechanical Vibrations | 3 | 3 | 0 | | | | |
| 電腦輔助工程分析(二) | Computer Aided Engineering Analysis (II) | 3 | 3 | 0 | | | | |
| 高等熱力學 | Advanced Thermodynamics | 3 | 3 | 0 | | | | |
| 自動化光學量測系統 | Automatic Optical Inspection | 3 | 3 | 0 | | | | |
| 液壓系統設計 | Hydraulic System Design | 3 | 3 | 0 | | | | |
| 電腦輔助模流分析 | Computer Aided Moldflow Analysis | 3 | 3 | 0 | | | | |
| 精密量測 | Precision Measurement | 3 | 3 | 0 | | | | |
| 三維金屬積層設計 | 3D Metal Additive Manufacturing Design | 3 | 3 | 0 | | | | |
| 粉末冶金 | Powder Metallurgy | 3 | 3 | 0 | | | | |
| 非傳統加工 | Non-Traditional Machining Processes | 3 | 3 | 0 | | | | |
| AI 智慧製造技術 | Intelligent manufacturing technology | 3 | 3 | 0 | | | | |
| 非破壞檢驗 | Non-Destructive Testing | 3 | 3 | 0 | | | | |
| 應用電子學(二) | Applied Electronics (II) | 3 | 3 | 0 | | | | |
| 積體電路與介面 | IC Interface | 3 | 3 | 0 | | | | |
| 現代控制 | Modern Control | 3 | 3 | 0 | | | | |
| 自動化生產系統 | Automatic Production Systems | 3 | 3 | 0 | | | | |
| 模糊控制 | Fuzzy Controls | 3 | 3 | 0 | | | | |
| AI 智慧機械聯網整合技術 | Intelligent Machine Networking Integration Technology | 3 | 3 | 0 | | | | |
| 工具機控制器實務 | Machine Tool Controller Practice | 3 | 3 | 0 | | | | |
| 奈米科技物理 | Nanotechnology Physics | 3 | 3 | 0 | | | | |
| 太陽能概論 | Introduction to Solar Energy Engineering | 3 | 3 | 0 | | | | |
| 造型藝術與創新設計 | Formative Arts and Innovation Design | 3 | 3 | 0 | | | | |
| 光電概論 | Introduction to Optoelectronics | 3 | 3 | 0 | | | | |
| 發明與專利 | Innovative Invention and Patent Layout | 3 | 3 | 0 | | | | |
| 醫工設備概論 | Introduction to Equipment of Biomedical Engineering | 3 | 3 | 0 | | | | |
| 汽車工程 | Automotive Engineering | 3 | 3 | 0 | | | | |
| 淨零概論 | Introduction to Net Zero | 3 | 3 | 0 | | | | |
| 生醫材料概論 | Introduction to Biological Materials | 3 | 3 | 0 | | | | |
| 鋰電池設計與開發 | Design and Development of Lithium-ion Batteries | 3 | 3 | 0 | | | | |
| 工程倫理 | Engineering Ethics | | | | | 3 | 3 | 0 |
| 機械系統設計 | Mechanical System Design | | | | | 3 | 3 | |
| 複合材料力學 | Mechanics of Composite Material | | | | | 3 | 3 | 0 |
| 科技論文寫作 | Technical Thesis Writing | | | | | 3 | 3 | 0 |
| 數位控制 | Digital Control | | | | | 3 | 3 | 0 |
| 生醫力學概論 | Introduction to Biomedical Mechanics | | | | | 3 | 3 | 0 |
| 最佳化設計 | Optimal Design | | | | | 3 | 3 | 0 |
| 航空產業概論 | Introduction to Aviation Industry | | | | | 3 | 3 | 0 |
| 彈塑性力學 | Mechanics of Elasticity and Plasticity | | | | | 3 | 3 | 0 |
| 精密模具設計與加工 | Precision Mold Design and Manufacturing | | | | | 3 | 3 | 0 |
| 防蝕工程 | Anti-corrosion Engineering | | | | | 3 | 3 | 0 |
| 微系統製造技術 | Microsystem Manufacturing Technology | | | | | 3 | 3 | 0 |
| 關鍵模組組裝與檢測 | Key Module Assembly and Testing | | | | | 3 | 3 | 0 |
| 校外實習(一) | Factory Practical Internship (I) | 9 | 0 | 9 | | | | |
| 校外實習(二) | Factory Practical Internship (II) | | | | | 9 | 0 | 9 |

備註 Note:

一、畢業至少應修滿 131 學分【必修 90 學分，選修至少 41 學分(須含本系專業選修至少 28 學分)】

Students should complete at least 131 credits before graduation, includes 90 required credits, 41 elective credits (elective credits should have at least 28 credits from professional elective courses).

二、本校訂有「國立勤益科技大學學生畢業門檻辦法」，畢業門檻條件：英文能力及自主學習，請依規定辦理。

Our school has established the "National Chin-yi University of Science and Technology Student Graduation Threshold Measures", Graduation threshold: English proficiency and independent study, please follow the regulations.

三、通識教育院所開設之「博雅通識課程」學分數(時)為2學分2學時或3學分3學時,經101學年度第二學期校課程委員會會議通過。
Liberal Arts General Study courses provided by College of General Education, are divided into 2 hours course with 2 credits or 3 hours course with 3 credits, ratified by the School Course Committee in 2012.

四、課程名稱前有標示「●」符號者,為「職能專業課程」。

Courses with a “●” refer to a professional competence course.

五、課程名稱前有標示「△」符號者,為程式設計課程。

Courses with a “△” refers to an application design course.

六、課程名稱前有標示「AI」符號者,為「人工智慧相關課程」。

Courses with an “AI” refer to an artificial intelligence related course.

七、學生須選讀本系所訂跨領域學程課程並有成績登錄。

Students need to register for the course of inter-disciplinary program set by this department and have a record of grades

| 113 學年度 製造與管理 學程 | | | | | |
|------------------|----|-------------------|------|----|-------------|
| 本系課程 | | | 外系課程 | | |
| 課程選別 | 學年 | 科目名稱(學分/學時) | 課程選別 | 學年 | 科目名稱(學分/學時) |
| 必修 | 一上 | 工廠實習 (1/3) | | | |
| 必修 | 一下 | 製造學 (3/3) | | | |
| 選修 | 三上 | 工程材料與應用 (3/3) | 選修 | 三上 | 科技管理 (3/3) |
| 選修 | 三下 | 電腦輔助工程分析(一) (3/3) | 選修 | 三下 | 品質工程 (3/3) |

| 113 學年度 自動化與人工智慧 學程 | | | | | |
|---------------------|----|---------------|------|----|-------------------|
| 本系課程 | | | 外系課程 | | |
| 課程選別 | 學年 | 科目名稱 | 課程選別 | 學年 | 科目名稱 |
| 必修 | 一上 | 程式語言 (3/3) | | | |
| 必修 | 二下 | 自動控制 (3/3) | | | |
| 選修 | 三上 | 訊號與系統 (3/3) | 選修 | 三上 | 影像處理概論 (3/3) |
| 選修 | 三下 | 機器人控制實務 (3/3) | 選修 | 三下 | Python 程式設計 (3/3) |

| 113 學年度 綠色能源 學程 | | | | | |
|-----------------|----|---------------|------|----|--------------|
| 本系課程 | | | 外系課程 | | |
| 課程選別 | 學年 | 科目名稱 | 課程選別 | 學年 | 科目名稱 |
| 必修 | 一上 | 材料科學與工程 (3/3) | | | |
| 必修 | 二下 | 熱力學(一) (3/3) | | | |
| 選修 | 三上 | 應用熱傳學 (3/3) | 選修 | 三上 | 能源管理技術 (3/3) |
| 選修 | 三下 | 再生能源技術 (3/3) | 選修 | 三下 | 節能技術概論 (3/3) |