# 國立勤益科技大學日間部四年制 111 學年度人工智慧應用工程系學分計畫表
## National Chin-Yi University of Technology
## Curriculum Planning of 2022 Four-Year Degree in
## Department of Artificial Intelligence and Computer Engineering

| 科目 | Courses | 上學期 First Semester | | | 下學期 Second Semester | | |
|------|---------|------|------|------|------|------|------|
| | | 學分 Credits | 正課 Lecture | 實習 Internship | 學分 Credits | 正課 Lecture | 實習 Internship |
| **共同必修科目(28 學分) General Required Courses (28 credits)** | | | | | | | |
| **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 | | | |
| 體育(一) | Physical Education (I) | 0 | 2 | 0 | | | |
| 全民國防教育軍事訓練(一) | All-Out Defense Education Military Training (I) | 0 | 2 | 0 | | | |
| 音樂鑑賞 | Music Appreciation | 1 | 1 | 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) | All-Out Defense Education Military Training (II) | | | | 0 | 2 | 0 |
| **第二學年 Second Year** | | | | | | | |
| 憲法與民主 | Constitution and Democracy | 2 | 2 | 0 | | | |
| 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 |
| **第四學年 Fourth Year（無必修課程 No General Required Courses）（無必修課程）** | | | | | | | |
| **專業必修科目 (40 學分) Department Required Courses (40 credits)** | | | | | | | |
| **第一學年 First Year** | | | | | | | |
| 微積分(一) | Calculus (I) | 3 | 3 | 0 | | | |
| 物件導向程式設計 | Object-oriented Programming | 3 | 3 | 0 | | | |
| 微處理機概論 | Introduction to Microprocessors | 3 | 3 | 0 | | | |
| 微積分(二) | Calculus (II) | | | | 3 | 3 | 0 |
| Python 程式設計 | Python Programming | | | | 3 | 3 | 0 |
| 人工智慧概論 | Introduction to Artificial Intelligence | | | | 3 | 3 | 0 |
| **第二學年 Second Year** | | | | | | | |
| 機器學習概論 | Introduction to Machine Learning | 3 | 3 | 0 | | | |
| 計算機組織 | Computer Organization | 3 | 3 | 0 | | | |
| 資料結構 | Data Structures | 3 | 3 | 0 | | | |
| 作業系統 | Operating Systems | | | | 3 | 3 | 0 |
| 演算法 | Algorithms | | | | 3 | 3 | 0 |
| 深度學習理論與應用 | Deep Learning Theory and Applications | | | | 3 | 3 | 0 |
| **第三學年 Third Year** | | | | | | | |
| 實務專題(I) | Project Study (I) | 2 | 6 | 0 | | | |

| 科目 | Courses | 上學期 First Semester | | | 下學期 Second Semester | | |
|---|---|---|---|---|---|---|---|
| | | 學分 Credits | 正課 Lecture | 實習 Internship | 學分 Credits | 正課 Lecture | 實習 Internship |
| 實務專題(II) | Project Study (II) | | | | 2 | 6 | 0 |
| 第四學年 Fourth Year（無排定 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 Internship | 學分 Credits | 正課 Lecture | 實習 Internship |
| 共同選修科目 General Electives Courses | | | | | | | |
| 第一學年 First Year（無排定共同選修課程 No General Elective Courses） | | | | | | | |
| 第二學年 Second Year | | | | | | | |
| 全民國防教育軍事訓練（三） | All-Out Defense Education Military Training (III) | 1 | 2 | 0 | | | |
| 全民國防教育軍事訓練（四） | All-Out Defense Education Military Training (IV) | | | | 1 | 2 | 0 |
| 體育選修 | Physical Elective Course | 1 | 2 | 0 | 1 | 2 | 0 |
| 第三學年 Third Year | | | | | | | |
| 體育選修 | Physical Elective Course | 1 | 2 | 0 | 1 | 2 | 0 |
| 全民國防教育軍事訓練（五） | All-Out Defense Education Military Training (V) | 1 | 2 | 0 | | | |
| 第四學年 Fourth Year | | | | | | | |
| 體育選修 | Physical Elective Course | 1 | 2 | 0 | 1 | 2 | 0 |
| 專業選修科目 Department Elective Courses | | | | | | | |
| 第一學年 First Year | | | | | | | |
| C 語言程式設計 | C Language Programming | 3 | 3 | 0 | | | |
| 電腦軟體應用與設計 | Computer Software Application and Design | 3 | 3 | 0 | | | |
| 線性代數 | Linear Algebra | | | | 3 | 3 | 0 |
| 網頁設計與網站管理 | Web Design and Website Management | | | | 3 | 3 | 0 |
| 第二學年 Second Year | | | | | | | |
| 系統分析與設計 | System Analysis and Design | 3 | 3 | 0 | | | |
| 機率與統計 | Probability and Statistics | 3 | 3 | 0 | | | |
| AI 應用數學概論 | Introduction to AI Applied Mathematics | 3 | 3 | 0 | | | |
| 資料擷取與感測器實務 | Data Acquisition and Sensor Practice | 3 | 3 | 0 | | | |
| 多媒體概論 | Introduction to Multimedia | 3 | 3 | 0 | | | |
| 職場倫理 | Workplace Ethics | 3 | 3 | 0 | | | |
| 嵌入式系統與感測器應用概論 | Introduction to Embedded System and Sensor Application | 3 | 3 | 0 | | | |
| 計算機網路概論 | Introduction to Computer Networks | | | | 3 | 3 | 0 |
| Python 機器學習應用 | Machine Learning Applications Using Python | | | | 3 | 3 | 0 |
| 系統架構與軟體工程實務 | System Architecture and Software Engineering Practice | | | | 3 | 3 | 0 |
| 數據分析與機器學習實務 | Data Analysis and Machine Learning Practice | | | | 3 | 3 | 0 |
| 資料庫系統 | Database Systems | | | | 3 | 3 | 0 |
| 數位影像處理導論 | Introduction to Digital Image Processing | | | | 3 | 3 | 0 |
| 校外實習（暑期）（一） | Extracurricular Intern (Summer Vacation)（I） | | | | 3 | 0 | 3 |
| Linux 系統實務 | Linux System Practice | | | | 3 | 3 | 0 |
| 離散數學 | Discrete Mathematics | | | | 3 | 3 | 0 |
| 生產與作業管理實務 | Production and Operation Management Practice | | | | 3 | 3 | 0 |
| 第三學年 Third Year | | | | | | | |
| 智慧機械概論 | Introduction to Intelligent Machinery | 3 | 3 | 0 | | | |
| 智慧機械 APP 設計實務 | Smart Machinery APP Design Practice | 3 | 3 | 0 | | | |
| OpenCV 影像處理實務 | OpenCV Image Processing Practice | 3 | 3 | 0 | | | |
| AI 影像辨識實務 | AI Image Recognition Practice | 3 | 3 | 0 | | | |
| 大數據與資料探勘實務 | Big Data and Data Mining Practice | 3 | 3 | 0 | | | |
| 資訊安全導論 | Introduction to Information Security | 3 | 3 | 0 | | | |
| 機率模型 | Probability Model | 3 | 3 | 0 | | | |
| 行動裝置應用設計實務 | Mobile Device Application Design Practice | 3 | 3 | 0 | | | |
| 物聯網控制實務 | Internet of Things Control Practice | 3 | 3 | 0 | | | |
| 網路協定分析實務 | Network Protocol Analysis Practice | 3 | 3 | 0 | | | |
| 實驗設計實務 | Experimental Design Practice | 3 | 3 | 0 | | | |
| 電腦視覺概論 | Computer Vision Fundamentals | | | | 3 | 3 | 0 |
| 3D 列印工程實務 | 3D Printing Engineering Practice | | | | 3 | 3 | 0 |
| 工業物聯網數據擷取與應用實務 | Data Acquisition and Application Practice using Industrial Internet of Things | | | | 3 | 3 | 0 |
| 深度學習程式實務 | Deep Learning Program Practice | | | | 3 | 3 | 0 |
| AI 商品影像辨識實務 | AI Product Image Recognition Practice | | | | 3 | 3 | 0 |
| AI 自然語言處理 | AI Natural Language Processing | | | | 3 | 3 | 0 |
| 遊戲程式設計實務 | Game Programming Practice | | | | 3 | 3 | 0 |
| 校外實習（暑期）（二） | Extracurricular Intern (Summer Vacation)（II） | | | | 3 | 0 | 3 |
| 雲端生產數據維運實務 | Cloud Production Data Maintenance and Operation Practice | | | | 3 | 3 | 0 |

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|---|---|---|---|---|---|---|---|
| AOI 工程應用實務 | AOI Engineering Application Practice | | | | 3 | 3 | 0 |
| 容器化部署實務 | Containerized Deployment Practice | | | | 3 | 3 | 0 |
| 推薦系統 & 聊天機器人實務 | Recommendation System & Chat Bot Practice | | | | 3 | 3 | 0 |
| 工業物聯網資安威脅檢測與防護 | Industrial Internet of Things Information Security Threat Detection and Protection | | | | 3 | 3 | 0 |
| 邊緣計算實務 | Edge Computing Practice | | | | 3 | 3 | 0 |
| **第四學年 Fourth Year** | | | | | | | |
| <span style="color:red">電腦視覺實務</span> | <span style="color:red">Computer Vision Practice</span> | <span style="color:red">3</span> | <span style="color:red">3</span> | <span style="color:red">0</span> | | | |
| 智慧機上盒實務 | Smart Machine Box Practice | 3 | 3 | 0 | | | |
| 機電整合實務 | Electromechanical Integration Practice | 3 | 3 | 0 | | | |
| 光學系統實務 | Optical System Practice | 3 | 3 | 0 | | | |
| 產學合作專題(一) | Topics on Industry-University Cooperation (I) | 3 | 3 | 0 | | | |
| 機器人學 | Robotics | 3 | 3 | 0 | | | |
| 科技英文(一) | English for Science and Technology (I) | 3 | 3 | 0 | | | |
| 軟體工程實務 | Software Engineering Practice | 3 | 3 | 0 | | | |
| 深度學習之生醫影像分析實務 | The Practice of Deep Learning Biomedical Image analysis | 3 | 3 | 0 | | | |
| 決策分析 | Strategic Analysis | 3 | 3 | 0 | | | |
| 最佳化理論與方法 | Optimization Theory and Method | 3 | 3 | 0 | | | |
| 雲端運算實務 | Cloud Computing Practice | 3 | 3 | 0 | | | |
| AI 產業應用實務 | AI Industrial Application Practice | 3 | 3 | 0 | | | |
| PUF 資訊安全技術 | PUF Information Security Technology | 3 | 3 | 0 | | | |
| 智慧影像辨識 | Intelligent Image Recognition | 3 | 3 | 0 | | | |
| 物聯網通訊實務 | Internet of Things Communication Practice | 3 | 3 | 0 | | | |
| <span style="color:red">光學檢測實務</span> | <span style="color:red">Optical Inspection Practice</span> | | | | <span style="color:red">3</span> | <span style="color:red">3</span> | <span style="color:red">0</span> |
| 自動控制理論 | Automatic Control Theory | | | | 3 | 3 | 0 |
| 工業機械手臂實務 | Industrial Robotic Arm Practice | | | | 3 | 3 | 0 |
| AI 虛擬實境實務 | AI Virtual Reality Practice | | | | 3 | 3 | 0 |
| 大數據分析實務 | Big data Analysis Practice | | | | 3 | 3 | 0 |
| 系統性創新方法實務 | Systematic Innovation Method and Practice | | | | 3 | 3 | 0 |
| 雲端環境管理與維護實務 | Cloud Environment Management and Maintenance Practice | | | | 3 | 3 | 0 |
| 產學合作專題(二) | Topics on Industry-University Cooperation (II) | | | | 3 | 3 | 0 |
| 資通訊專案管理 | Information and Communication Project Management | | | | 3 | 3 | 0 |
| AIoT 控制實務 | AIoT Control Practice | | | | 3 | 3 | 0 |
| 科技英文(二) | English for Science and Technology (II) | | | | 3 | 3 | 0 |
| 校外實習(一) | Extracurricular Intern (I) | 12 | 0 | 12 | | | |
| 校外實習(二) | Extracurricular Intern (II) | | | | 12 | 0 | 12 |

備註 Note：

一、畢業至少應修滿 130 學分【必修 68 學分，選修 62 學分】
　　Students should complete at least 130 credits before graduation, including 68 required credits, 62 elective credits.

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、通識教育學院所開設之「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 opened by College of General Education, are divided into 2 hours course with 2 credits or 3 hours course with 3 credits, ratified by Course Committee in 2012.

四、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

| 智慧控制跨領域學程 | | |
|---|---|---|
| 課程選別 | 學年 | 課程名稱(學分/學時) |
| 必修 | 二下 | 演算法 (3/3) |
| 必修 | 二下 | 深度學習理論與應用 (3/3) |
| 專業選修 (任選二門) | 三上 | AI 影像辨識實務 (3/3) |
| | 三下 | 工業物聯網數據擷取與應用實務 (3/3) |
| | 三下 | <span style="color:red">電腦視覺實務 (3/3)</span> |
| 外系選修 | 三上 | LabVIEW 程式設計與應用 (3/3) |
| 外系選修 | 四下 | 數位控制 (3/3) |