國立勤益科技大學日間部 114 學年度 精密製造科技研究所 智慧機械與智慧製造產業博士學位學程 學分計畫表

National Chin-Yi University of Technology

Curriculum for 2025, Ph.D Program, Intelligent Machinery and Smart Manufacturing

113.9.23 所課程會議審議通過 113.9.26 所務會議審議通過 113.11.19 院課程會議審議通過

113.12.5.校課程委員會議及 113.12.24.臨時教務會議審議通過

| 上手寿 | 113.12.5.校課程委員會議及 113.12.24.臨時教務會議審議通過 | | | | | | | | | |
|--|--|--|---------------------------------------|---|----------|----------|--|--|--|--|
| 大門金修料目(16 学分) General Required Courses (16 credits) | 科目 | | * * | | | | | | | |
| 大門の多件目 (16 等分) General Required Courses (16credits) | | Courses | | | | | | | | |
| 共同多锋科目(16 舉分) General Required Courses (16credits) 常亭季年First Year 1 2 實務季趣研究(二) Seminar II 1 2 實務季趣研究(三) Seminar III 1 2 實務季趣研究(三) Seminar III 1 2 素需養養養好稅(四) Seminar IV 1 2 基業實務研發論文(一) Industry practice internship (I) 3 3 3 3 基業實務研發論文(一) Industry practice internship (II) 3 3 3 3 3 基業實務研發論文(一) Industry practice internship (II) 3 <th></th> <th></th> <th></th> <th></th> <th></th> | | | | | | | | | | |
| 黄霧幸趣研究(一) Seminar II 1 2 2 2 3 3 3 3 3 3 3 | | 共同必修科目(16 學分) General Required Courses (16cr | redits) | | | | | | | |
| 東京孝奥研究(二) Seminar III 第二季年 Second Year 第二 | | 第一學年 First Year | · · · · · · · · · · · · · · · · · · · | | | | | | | |
| 京将車題研究(二) Seminar II | 實務專題研究(一) | Seminar I | 1 | 2 | | | | | | |
| 第二季年 Second Year 黄務早題研究(四) Seminar III 1 2 1 2 2 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 | | Seminar II | | | 1 | 2 | | | | |
| 常務専題研究(三) Seminar III 1 2 1 2 2 2 2 2 2 2 | X W V C 176() | | <u> </u> | | <u> </u> | | | | | |
| 資務專題研究(四) Seminar IV 第三季年 Third Year | 實務專題研究(三) | • | 1 | 2 | | | | | | |
| 第三學年 Third Year | | | - | | 1 | 2. | | | | |
| 產業實務研發論文(一) Industry practice internship (I) 3 3 3 3 產業實務研發論文(二) Industry practice internship (II) 3 3 3 3 3 核公必遲移科目(3學分) Core Required Courses (3credits) 核公必遲移科目(3學分) Department Required Courses (20 credits) 3 3 3 構密工程科技概論 Introduction of Precision Engineering Technology 3 3 3 基期產業實習(一) Summer Field Practice I 1 1 1 整機械組 Intelligent Machinery 8 2 2 4 <td>X 40 4 7 C 11 7 C (-1)</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> | X 40 4 7 C 11 7 C (-1) | | | | - | | | | | |
| # 四學年 Fourth Year | 产业實務研發論文(一) | | 3 | 3 | 3 | 3 | | | | |
| 產業實務研發論文(二) Industry practice internship (II) 3 4 <td><u> </u></td> <td>* **</td> <td>3</td> <td>3</td> <td>3</td> <td></td> | <u> </u> | * ** | 3 | 3 | 3 | | | | | |
| 核心必選修料目(3 學分) Core Required Courses (3credits) 精密工程科技概論 Introduction of Precision Engineering Technology 3 3 3 事業選修料目(20 學分) Department Required Courses (20 credits) 第一學年 First Year 共同選修科目 General Elective Courses 暑期產業實習(一) Summer Field Practice I 1 1 1 智慧機械組 Intelligent Machinery 感測器原理與應用 Principle and Application of Sensors 3 3 3 4 自動化光學量別系統 Auto-Optical Measurement System 3 3 3 4 精密機械持論 Special Topics of Precision Machinery 3 3 3 3 3 3 4 最後機械產業分析特論 Special Topic of Precision Machinery 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | · · · · · · · · · · · · · · · · · · · | | 3 | 3 | 3 | 3 | | | | |
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| 專業選修科目(20 學分) Department Required Courses (20 credits) 第一學年 First Year 共同選修科目 General Elective Courses 暑期產業實習(一) Summer Field Practice I 1 1 1 智慧機械但 Intelligent Machinery 感測器原理與應用 Principle and Application of Sensors 3 3 3 自動化光學量測系統 Auto-Optical Measurement System 3 3 3 精密機械產業分析特論 Special Topics of Precision Machinery 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | 特宓工程科壮娜 於 | | | 2 | | | | | | |
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| 共同遷修科目 General Elective Courses暑期產業實習(一)Summer Field Practice I11虧潤器原理與應用Principle and Application of Sensors33自動化光學量測系統Auto-Optical Measurement System33精密機械持論Special Topics of Precision Machinery33競性化方法與應用Optimization and Applications33切削持論Special Topics of Machining Technology33電腦輔助工程技術Computer Aided Engineering Technology33電腦輔助流場分析Special Topics on Mechatronic Engineering33電腦輔助流場分析Computer-Aided Fluid Analysis33切削頻振理論與抑制Theory of Cutting Chattering Cutting flutter33高效能切削與加工監控High Performance Cutting and Monitoring for Manufacture33自動化生產系統Automated production system33精密機械控制Precision Machinery Dynamics and Control33精密機械控制Precision Machinery Dynamics and Control33射新發明與專利佈局Innovative Invention and Patent Research33資驗設計Experiment Design33水横能源組 Sustainable Energy冷凍電源組 Sustainable Energy冷凍空湖系統工程Heating, Ventilation, and Air Conditioning System33 | | | creuits) | | | | | | | |
| 暑期產業實習(一)Summer Field Practice I11智慧機械組 Intelligent Machinery感測器原理與應用Principle and Application of Sensors33自動化光學量測系統Auto-Optical Measurement System33精窗機械持論Special Topics of Precision Machinery33精窗機械差業分析特論Special Topics of Precision Machinery33取削特論Special Topics of Machining Technology33電腦輔助工程技術Computer Aided Engineering Technology33機電整合特論Special Topics on Mechatronic Engineering33機機電系統Micro-Mechatronic Systems33電腦輔助流場分析Computer-Aided Fluid Analysis33切削類振理論與抑制Theory of Cutting Chattering Cutting flutter33高效能切削與加工監控High Performance Cutting and Monitoring for Manufacture33自動化生產系統Automated production system33精密機械控制Precision Machinery Dynamics and Control33精密機械量測Precise Machine Measurement33創新發明與專利佈局Innovative Invention and Patent Research33實驗設計Experiment Design33多軸加工原理與應用Application and Principle of Multi Axis Machining33养養加工Precision Machining33水鏡縣組 Sustainable Energy冷凍空網系統工程Heating, Ventilation, and Air Conditioning System33 | | | | | | | | | | |
| 智慧機械組 Intelligent Machinery 感測器原理與應用 Principle and Application of Sensors 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | 日 15 土 水 中 37 /) | | | | | | | | | |
| 成洲器原理與應用 | 者期產業貫習(一) | | | | 1 | 1 | | | | |
| 自動化光學量測系統 Auto-Optical Measurement System 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | B 1 | | | | | | | | | |
| 精密機械持論 Special Topics of Precision Machinery 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | | 1 11 | | | | | | | | |
| 精密機械產業分析特論 Special Topic of Precision Machine Industry Analysis 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | ' | | | _ | | | | | | |
| 最佳化方法與應用 Optimization and Applications 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | | · · · · · · · · · · · · · · · · · · · | | | | | | | | |
| 切削特論 Special Topics of Machining Technology 3 3 3 3 3 3 3 3 3 | · · · · · · · · · · · · · · · · · · · | | | | | | | | | |
| 電腦輔助工程技術 Computer Aided Engineering Technology 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | | 11 | | | | | | | | |
| 機電整合特論 Special Topics on Mechatronic Engineering 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | | | | | | | | | | |
| 微機電系統Micro-Mechatronic Systems33電腦輔助流場分析Computer-Aided Fluid Analysis33切削顫振理論與抑制Theory of Cutting Chattering Cutting flutter33高效能切削與加工監控High Performance Cutting and Monitoring for Manufacture33自動化生產系統Automated production system33精密製造特論Special topics of Precision manufacturing33精密機械控制Precision Machinery Dynamics and Control33精密機械量測Precise Machine Measurement33創新發明與專利佈局Innovative Invention and Patent Research33實驗設計Experiment Design33多軸加工原理與應用Application and Principle of Multi Axis Machining33精密加工Precision Machining33水績能源組 Sustainable Energy冷凍空調系統工程Heating, Ventilation, and Air Conditioning System33 | | | | | | | | | | |
| 電腦輔助流場分析 Computer-Aided Fluid Analysis 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | | | | | | <u> </u> | | | | |
| 切削顫振理論與抑制 Theory of Cutting Chattering Cutting flutter 3 3 3 3 3 3 3 3 4 4 | | · | | | | <u> </u> | | | | |
| 高效能切削與加工監控 High Performance Cutting and Monitoring for Manufacture 自動化生產系統 Automated production system 3 3 3 | | | 3 | 3 | | | | | | |
| 自動化生產系統 Automated production system 3 3 3 | · · · · · · · · · · · · · · · · · · · | | | | | | | | | |
| 精密製造特論 Special topics of Precision manufacturing 3 3 3 | | | | | 3 | | | | | |
| 精密機械控制 Precision Machinery Dynamics and Control 3 3 3 | | • | | | 3 | | | | | |
| 精密機械量測 Precise Machine Measurement 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | | 1 1 | | | | | | | | |
| 創新發明與專利佈局 Innovative Invention and Patent Research 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | | | | | | | | | | |
| 實驗設計Experiment Design33多軸加工原理與應用Application and Principle of Multi Axis Machining33精密加工Precision Machining33永續能源組 Sustainable Energy冷凍空調系統工程Heating, Ventilation, and Air Conditioning System33 | | | | | | | | | | |
| 多軸加工原理與應用Application and Principle of Multi Axis Machining33精密加工Precision Machining33永續能源組 Sustainable Energy冷凍空調系統工程Heating, Ventilation, and Air Conditioning System33 | | | | | | | | | | |
| 精密加工 Precision Machining 3 3 3 | · · · · · · · · · · · · · · · · · · · | | | | 3 | | | | | |
| 永續能源組 Sustainable Energy 冷凍空調系統工程 Heating, Ventilation, and Air Conditioning System 3 3 | | 1 0 | | | | | | | | |
| 冷凍空調系統工程 Heating, Ventilation, and Air Conditioning System 3 3 | 精密加工 | · · · · | | | 3 | 3 | | | | |
| | | | 1 | | 1 | | | | | |
| | | | | | | | | | | |
| 能源工程實務 Energy and Power Engineering 3 3 | 能源工程實務 | 0, 0 | 3 | 3 | | | | | | |
| 冷凍空調控制工程 Control Engineering of Refrigeration and Air-conditioning 3 3 | | System | | | | | | | | |
| 燃料電池原理與應用 Fuel Cell Theory and Applications 3 3 | 燃料電池原理與應用 | Fuel Cell Theory and Applications | 3 | 3 | | | | | | |
| 計算流體力學 Computational Fluid Dynamics 3 3 | 計算流體力學 | Computational Fluid Dynamics | 3 | 3 | | | | | | |

| 高等熱傳學 | Special Topics of Heat Transfer | | | 3 | 3 | | | | |
|-------------------------------|---|---|---|---|---|--|--|--|--|
| 高等流體力學 | Special Topics of Fluid Mechanics | | | 3 | 3 | | | | |
| 風力發電特論 | Special Topics of Wind Power | | | 3 | 3 | | | | |
| 空調節能技術 | Energy Saving Techniques of Refrigeration and Air-Conditioning System | | | 3 | 3 | | | | |
| 電子熱傳 | Electronic Heat Transfer | | | 3 | 3 | | | | |
| 先進材料組 Advanced Materials | | | | | | | | | |
| 奈米科技特論 | Special topics of Nano Sciences and Technology | 3 | 3 | | | | | | |
| 智慧材料 | Smart Materials | | | 3 | 3 | | | | |
| 高等材料科學 | Special Topics of Materials Science and Engineering | | | 3 | 3 | | | | |
| 複合材料特論 | Special Topics of Composite Materials | | | 3 | 3 | | | | |
| 精密薄膜科技 | Special Topics of Thin Film Technology | | | 3 | 3 | | | | |
| 第二學年 Second Year | | | | | | | | | |
| 共同科目 General Elective Courses | | | | | | | | | |
| 暑期產業實習(二) | Summer Field Practice II | | | 1 | 1 | | | | |
| 智慧機械組 Intelligent Machinery | | | | | | | | | |
| 控制器應用實務 | Controller Application | 3 | 3 | | | | | | |
| 機械系統故障診斷 | Fault Diagnosis of Mechanical System | 3 | 3 | | | | | | |
| 精密機械設計 | Design for Precision Machinery | 3 | 3 | | | | | | |
| 機械振動與量測 | Mechanical Vibrations and Measurements | 3 | 3 | | | | | | |
| 智慧整合感測系統 | Intelligent Integration Sensing System | | | 3 | 3 | | | | |
| 物聯網雲端應用實務 | Application of IOT | | | 3 | 3 | | | | |
| 智慧製造技術 | Smart Manufacturing Technology | | | 3 | 3 | | | | |
| 有限元素法特論 | Special Topics of Finite Element Method | | | 3 | 3 | | | | |
| 微系統製造技術 | Fabrication Technologies of Micro-systems | | | 3 | 3 | | | | |
| 永續能源組 Sustainable Energy | | | | | | | | | |
| 特殊通風技術 | Special Air Ventilation Technology | 3 | 3 | | | | | | |
| 綠建築物理環境控制 | Physical Environment Control of Green Architecture | 3 | 3 | | | | | | |
| 煙控系統設計與分析 | Design and Analysis of Smoke Management Systems | | | 3 | 3 | | | | |
| 室內環境品質 | Indoor Environment Quality | | | 3 | 3 | | | | |
| 特殊空調設計 | Special HVAC System Design | | | 3 | 3 | | | | |
| 氫能技術與應用 | Hydrogen Technology and Application | | | 3 | 3 | | | | |
| 先進材料組 Advanced Materials | | | | | | | | | |
| 奈米材料與化工技術 | Nanomaterials and Chemical Technology | 3 | 3 | | | | | | |
| 電化學技術與應用 | Electrochemical Techniques and Applications | 3 | 3 | | | | | | |
| 導電性高分子特論 | Special Topics of Electro Conductive Polymers | • | | 3 | 3 | | | | |
| 第三學年 Third Year | | | | | | | | | |
| 全學年產業實務實習(一) | Field Practice I | 0 | 1 | 0 | 1 | | | | |
| 第四學年 Fourth Year | | | | | | | | | |
| 全學年產業實務實習(二) | Field Practice II | 0 | 1 | 0 | 1 | | | | |
| , | | - | 1 | _ | 1 | | | | |

備註 Note:

畢業至少應修滿 36 學分【共同必修 16 學分(產業實務研發論文 12 學分,實務專題研究 4 學分 8 學時),選修至少 20 學分】。

Students should complete at least 36 credits before graduation, includes 16 required credits (12 credits for Thesis, 8 credits for

- Seminar, 18 elective credits (included general and advanced courses).
 、本所訂有「國立勤益科技大學精密製造科技研究所智慧機械與智慧製造產業博士學位學程修業辦法」,請依規定辦 理。 Please follow the regulations of "The NCUT, Ph.D. Program, Intelligent Machinery and Smart Manufacturing on Academic Studies".
- 三、學生應於申請學位考試前至「教育部臺灣學術倫理教育資源中心」網路平臺完成學術研究倫理教育課程,至少6小 時課程。
 - Students need to complete the academic research ethics education course for at least 6 hours before the final defence
- applicaiton. 學生簽訂本校「產學合作培育博士級研發人才計畫合約書」者,畢業學分須修畢暑期產業實習 2 學分及全學年產業實務實習(一)與(二) 0 學分。 Students who join the project, they should complete 2 credits for Summer Field Practice and 0 credit for Field Practice I&II before graduation.
- 為因應法規變更、評鑑建議或政府計畫規定等外在因素,本所保有調整學分計畫之權利。若有修訂,將於學期開始前公告,並明確說明修訂內容、影響範圍及相關配套措施,以保障學生權益。 The department reserves the right to adjust the curriculum in response to external factors such as changes in regulations, suggestions of evaluation and accreditation, or government program regulations. If there are any revisions, will be announced before the start of the semester, and the revised content, scope of impact, and related supporting measures will be clearly stated to protect the rights and interests of students.