

國立勤益科技大學日間部 109 學年度前瞻電資科技產業博士學位學程學分計畫表

National Chin-Yi University of Technology

Curriculum for 2020 Ph.D Program, Prospective Technology of Electrical Engineering and Computer Science

109.05.14 課程及學位學程會議通過及 109.5.21 院課程委員會審議通過

109.5.28.校課程委員會議及 109.6.11.教務會議審議通過

110.1.19、110.5.6 課程委員會議及 110.5.6 學位學程會議修正通過

110.05.11.院課程委員會審議通過

110.05.25.校課程委員會議及 110.06.15.教務會議審議通過

| 科目 | Courses | 上學期 | | 下學期 | |
|---|---|----------------|-------------|-----------------|-------------|
| | | First Semester | | Second Semester | |
| | | 學分 Credits | 學時 Hours | 學分 Credits | 學時 Hours |
| 共同必修科目(18 學分) General Required Courses (18 credits) | | | | | |
| 第一學年 First Year | | | | | |
| 實務專題研究(一) | Seminar | 1 | 2 | | |
| 實務專題研究(二) | Seminar II | | | 1 | 2 |
| 暑期產業實習(一) | Summer Field Practice I | | | 1 | 1 |
| 第二學年 Second Year | | | | | |
| 實務專題研究(三) | Seminar III | 1 | 2 | | |
| 實務專題研究(四) | Seminar IV | | | 1 | 2 |
| 暑期產業實習(二) | Summer Field Practice II | | | 1 | 1 |
| *博士論文(一) | Dissertation I | 3 | 3 | 3 | 3 |
| 第三學年 Third Year | | | | | |
| 產業實務研發論文 I | Industrial Research Dissertation I | 3 | 3 | 3 | 3 |
| 全學年產業實務實習(一) | Field Practice I | 0 | 1 | 0 | 1 |
| *博士論文(二) | Dissertation II | 3 | 3 | 3 | 3 |
| 第四學年 Fourth Year | | | | | |
| 產業實務研發論文 II | Industrial Research Dissertation II | 3 | 3 | 3 | 3 |
| 全學年產業實務實習(二) | Field Practice II | 0 | 1 | 0 | 1 |
| 選修科目(18 學分) Elective Courses (18 Credits) | | | | | |
| 基礎課程 General Courses | | | | | |
| 第一學年 First Year | | | | | |
| 高等電機設計 | Advanced Electric Machinery Design | 3 | 3 | | |
| *交換式電源轉換器 | Switching Power Converter | 3 | 3 | | |
| 智慧感測與監控系統 | Smart Sensor and Supervisory Control System | 3 | 3 | | |
| 無人車定位與導航 | SLAM Application in Autonomous Cars | 3 | 3 | | |
| 智慧機器人學 | Intelligent Robotics | 3 | 3 | | |
| 田口式品質工程法 | Taguchi Quality Engineering | 3 | 3 | | |
| 高等模糊控制 | Advanced Fuzzy Control | 3 | 3 | | |
| 人工智慧 | Artificial Intelligence | 3 | 3 | | |
| 影像處理 | Image Processing | 3 | 3 | | |
| 系統性創新理論與應用 | Systematic Innovation and TRIZ Methodology | 3 | 3 | | |
| 工業4.0網路實務 | Industry 4.0 Network Practice | | | 3 | 3 |
| 太陽光電發電系統設計 | Practicality of Photovoltaic Power Generation Systems | | | 3 | 3 |
| 高科技專利取得與攻防 | High Tech Patent Application & Protection | | | 3 | 3 |
| 智慧機電系統 | Smart Mechatronics System | | | 3 | 3 |
| 機器人機構與系統設計 | Robot Mechanism and System Design | | | 3 | 3 |
| 機器學習 | Machine Learning | | | 3 | 3 |

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|-----------------------------|---|---|---|---|---|
| 嵌入式系統專論 | Monograph of Embedded System | | | 3 | 3 |
| 自動化與機電整合 | Automation and Mechatronics | | | 3 | 3 |
| 深度學習實務應用 | Applications for Deep Learning | | | 3 | 3 |
| 電動機驅動設計實務 | Design and Implementation of Electric Drive | | | 3 | 3 |
| *高等 SLAM 同步定位與製圖 | Advanced Simultaneous-Location and Mapping | | | 3 | 3 |
| *高等系統動態模擬 | Advanced Dynamic System Simulation | | | 3 | 3 |
| *高等數位影像處理 | Advanced Digital Image Processing | | | 3 | 3 |
| *自動機原理 | Automata Theory | | | 3 | 3 |
| *進階巨量資料分析 | Advanced Big Data Analytics | | | 3 | 3 |
| *高等電力電子學 | Advanced Power Electronics | | | 3 | 3 |
| 進階課程 Advanced Courses | | | | | |
| 第二學年 SecondYear | | | | | |
| 風能理論與案例分析 | Wind Energy Theory and Case Studies Analysis | 3 | 3 | | |
| 先進電能儲存技術 | Advanced Energy Storage technologies | 3 | 3 | | |
| *氫能與燃料電池技術 | Hydrogen and Fuel Cell Technology | 3 | 3 | | |
| 智慧機器人定位導航 | Intelligent Robotic Positioning and Navigation | 3 | 3 | | |
| 工業機器人系統與應用 | Industrial Robot System and Application | 3 | 3 | | |
| 機器視覺 | Machine Vision | 3 | 3 | | |
| 多媒體安全技術 | Multimedia Security Technology | 3 | 3 | | |
| 超啟發式演算法 | Meta-Heuristic Algorithm | 3 | 3 | | |
| 萃智方法與應用 | TRIZ Method with Applications | 3 | 3 | | |
| 智慧電網 | Smart Grid | | | 3 | 3 |
| 智慧整合感控系統 | Theory and Practice for Cyber-Physical Systems | | | 3 | 3 |
| 機器人作業系統 | Robot Operation System | | | 3 | 3 |
| 互動機器人設計與應用 | Robots for Interaction Design and Service Application | | | 3 | 3 |
| *雲端計算與服務 | Cloud Computing and Services | | | 3 | 3 |
| 電腦視覺 | Computer Vision | | | 3 | 3 |
| 電力電子學之電腦輔助設計 | Computer-Aided Design of Power Electronics | | | 3 | 3 |
| 感測聯網系統實務 | Sensor Networks System Practice | | | 3 | 3 |

備註 Note :

- 一、畢業至少應修滿 36 學分【共同必修 18 學分(產業實務研發論文 12 學分、實務專題研究 4 學分、暑期產業實務實習 2 學分及全學年產業實務實習 0 學分)，選修至少 18 學分】。
Students should complete at least 36 credits before graduation, includes 18 required credits (12 credits for Dissertation, 4 credits for Seminar, 2 credits for Summer Field Practice, and 0 credits for Field Practice), and general and advanced courses 18 credits.
- 二、本學位學程訂有「國立勤益科技大學前瞻電資科技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, Prospective Technology of Electrical Engineering and Computer Science”.
- 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 application

- 四、課程名稱加註「*」為學位學程課程委員會審議通過之全英文課程，凡院所屬外籍學生皆可選讀，修習及格可認定為所屬之專業選修課程。

The courses marked with an asterisk (*) are lectured in English-only. International students in the College of Electrical Engineering and Computer Science are allowed to choose these courses. Once the students pass the course, the credits can be counted as professional elective credits.

- 五、外籍學生並非產博計畫生，不用參與產業實習，「暑期產業實習(一)、(二)」及「全學年產業實務實習(一)、(二)」課程共計 2 學分，需額外加選選修課程折抵；故外籍學生畢業至少應修滿 36 學分【共同必修 16 學分(*博士論文 12 學分、實務專題研究 4 學分)，選修至少 20 學分】。

International students do not join the industry and doctoral program and are not required to participate in the industry internship. There are 2 credits for "summer industrial practice (1), (2)" and "full academic year industrial practice (1), (2)", which need to be offset by additional elective courses. Therefore, International students should complete at least 36 credits, including 16 credits for required courses (12 credits for dissertation, 4 credits for practical research) and 20 credits for elective courses.