

國立虎尾科技大學飛機工程系【碩士班】科目表（115 學年度入學適用）  
Department of Aeronautical Engineering, National Formosa University  
Curriculum for Graduated Students (115 academic year for)

115 年 4 月 28 日 114 學年度第 2 學期第 1 次課程委員會議通過

115 年 5 月 5 日 114 學年度第 2 學期第 2 次系務會議通過

115 年 5 月 27 日 114 學年度第 3 次院課程會議通過

115 年 6 月 18 日 114 學年度第 4 次教務會議通過

| 學年<br>Academic<br>Year    | 第一學年 First Year                                                                    |              |            |                                                       |              |            | 第二學年 Second Year                                              |              |            |                                                      |              |            | 小計          |
|---------------------------|------------------------------------------------------------------------------------|--------------|------------|-------------------------------------------------------|--------------|------------|---------------------------------------------------------------|--------------|------------|------------------------------------------------------|--------------|------------|-------------|
| 學期<br>semester            | 上 First                                                                            |              |            | 下 Second                                              |              |            | 上 First                                                       |              |            | 下 Second                                             |              |            |             |
| 必修科目<br>Required Courses  | 科目 subject                                                                         | 學分<br>Credit | 時數<br>Hour | 科目 subject                                            | 學分<br>Credit | 時數<br>Hour | 科目 subject                                                    | 學分<br>Credit | 時數<br>Hour | 科目 subject                                           | 學分<br>Credit | 時數<br>Hour | 學分<br>Credi |
|                           | 專題研討(一)<br>Special topic<br>research seminar<br>(1)                                | 0            | 2          | 專題研討(二)<br>Special topic<br>research seminar<br>(2)   | 0            | 2          | 專題研討(三)<br>Special topic<br>research seminar<br>(3)           | 0            | 2          | 專題研討(四)<br>Special topic<br>research seminar<br>(4)  | 0            | 2          | 6           |
|                           |                                                                                    |              |            |                                                       |              |            | 碩士論文(一)<br>Thesis (1)                                         | 3            | 0          | 碩士論文(二)<br>Thesis (2)                                | 3            | 0          |             |
|                           | 小計                                                                                 |              | 0          | 2                                                     |              | 0          | 2                                                             |              | 3          | 2                                                    |              | 3          |             |
| 選修科目<br>Electives Courses | 民航機維修工程<br>Civil aircraft<br>maintenance<br>engineering                            | 3            | 3          | 飛機維修計畫管理<br>Aircraft<br>Maintenance Plan<br>Document  | 3            | 3          | 維修管理資訊化<br>Information system<br>of maintenance<br>management | 3            | 3          | 航空器電源轉換器<br>設計<br>Airplane Switching<br>Power supply | 3            | 3          | 專業選修至少24學分  |
|                           | 噴射推進<br>Jet propulsion                                                             | 3            | 3          | 飛機穩定性與控制<br>Aircraft stability<br>and control         | 3            | 3          | 結構動力學<br>Structure dynamics                                   | 3            | 3          | 互補式導航定位系<br>統<br>complementary<br>navigation system  | 3            | 3          |             |
|                           | 固體力學 Solid<br>Mechanics                                                            | 3            | 3          | 航空公司管理實務<br>Selected topics on<br>airline maintenance | 3            | 3          | 飛行控制系統<br>Flight Control<br>System                            | 3            | 3          | 校外實習-產業研<br>發(二)<br>Industrial<br>Internship(2)      | 1            | 2          |             |
|                           | 飛航安全<br>flight safety                                                              | 3            | 3          | 氣體動力學<br>Gas Dynamics                                 | 3            | 3          | 航空雷達<br>Aviation Radar                                        | 3            | 3          |                                                      |              |            |             |
|                           | 飛機結構設計與<br>工程分析<br>Engineering<br>analysis and<br>design Of Aircraft<br>structures | 3            | 3          | 燃燒學<br>Combustion                                     | 3            | 3          | 天線工程<br>Antenna<br>Engineering                                | 3            | 3          |                                                      |              |            |             |
|                           | 高等工程數學<br>Advanced<br>engineering<br>mathematics                                   | 3            | 3          | 高等熱力學<br>Advanced<br>thermodynamics                   | 3            | 3          | 多變數系統控制<br>Multi-variable<br>system control                   | 3            | 3          |                                                      |              |            |             |
|                           | 數值方法<br>Numerical<br>Methods                                                       | 3            | 3          | 非線性系統<br>Nonlinear Systems                            | 3            | 3          | 自動飛行系統設計<br>與模擬<br>Autopilot design<br>and simulation         | 3            | 3          |                                                      |              |            |             |
|                           | 系統工程理論與<br>實務<br>Theory and<br>practice of system<br>engineering                   | 3            | 3          | 彈性力學<br>Elasticity                                    | 3            | 3          | 校外實習-產業研<br>發(一)<br>Industrial<br>Internship(1)               | 1            | 2          |                                                      |              |            |             |
|                           | 線性系統<br>linear Systems                                                             | 3            | 3          | 飛航管制<br>Air traffic control                           | 3            | 3          | 高等數值方法<br>Advanced<br>numerical method                        | 3            | 3          |                                                      |              |            |             |
|                           | 航空工程實驗方<br>法<br>Experimental<br>methods for<br>aeronautical<br>engineering         | 3            | 3          | 可靠度工程<br>Reliability<br>engineering                   | 3            | 3          | 衛星系統工程<br>satellite System<br>Engineering                     | 3            | 3          |                                                      |              |            |             |
|                           | 破壞力學<br>Fracture<br>Mechanics                                                      | 3            | 3          | 複合材料力學<br>Mechanics of<br>composite materials         | 3            | 3          | 太空載具動力學<br>Spacecraft<br>Dynamics                             | 3            | 3          |                                                      |              |            |             |
|                           | 高等熱質傳<br>Advanced Heat<br>and Mass Transfer                                        | 3            | 3          | 計算流體力學<br>Computational fluid<br>dynamics             | 3            | 3          | 立方衛星設計實務<br>Cubesat Design<br>Practice                        | 3            | 3          |                                                      |              |            |             |
|                           | 熱對流<br>Convective Heat<br>Transfer                                                 | 3            | 3          | 人因工程<br>human factor<br>engineerin                    | 3            | 3          | 火箭推進<br>Rocket Propulsion                                     | 3            | 3          |                                                      |              |            |             |
|                           | 國際民航法規<br>International<br>Aviation<br>Regulations                                 | 3            | 3          | 數位訊號處理實務<br>Practice Digital<br>Signal Processing     | 3            | 3          | 微感測器與致動器<br>Microsensors and<br>Actuators                     | 3            | 3          |                                                      |              |            |             |

| 學年<br>Academic<br>Year | 第一學年 First Year                                                                   |   |   |                                                                    |   |   | 第二學年 Second Year |  |  |          |  |  | 小計 |
|------------------------|-----------------------------------------------------------------------------------|---|---|--------------------------------------------------------------------|---|---|------------------|--|--|----------|--|--|----|
| 學期<br>semester         | 上 First                                                                           |   |   | 下 Second                                                           |   |   | 上 First          |  |  | 下 Second |  |  |    |
|                        |                                                                                   |   |   |                                                                    |   |   |                  |  |  |          |  |  |    |
|                        | 紊流學<br>Turbulence                                                                 | 3 | 3 | 天線原理與設計<br>antenna theory and design                               | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 航空品保與驗證<br>Aircraft quality assurance and certification                           | 3 | 3 | 電能轉換電路分析<br>Power Electronic Converter                             | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 飛航管理<br>Flight management                                                         | 3 | 3 | 智慧型控制<br>Intelligent Control                                       | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 科技論文寫作<br>Technology Thesis Writing                                               | 3 | 3 | 全球衛星定位系統<br>Global position system                                 | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 即時嵌入式系統設計<br>real-time embedded system                                            | 3 | 3 | 航電系統<br>Avionics System                                            | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 航空影像處理<br>Aviation image process                                                  | 3 | 3 | 機電整合<br>Mechatronics integration                                   | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 電能應用設計實務<br>practical design considerations for power electronics applied systems | 3 | 3 | 飛機系統監測與分析<br>Aircraft system monitoring and analysis               | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 行動通訊系統<br>mobile communication system                                             | 3 | 3 | 綠色能源系統設計<br>green energy system design                             | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 數位影像處理<br>Digital image processing                                                | 3 | 3 | 導航導引律設計<br>Navigation and guidance design                          | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 展頻通訊<br>spread spectrum communication                                             | 3 | 3 | 電磁干擾與電磁相容<br>EMI and EMC                                           | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 慣性導航系統<br>Inertial Navigation system                                              | 3 | 3 | 無線網路<br>Wireless Internet                                          | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 高等電力電子學<br>Advanced power electronics                                             | 3 | 3 | 無線感測系統與應用<br>Wireless sensor systems and applications              | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 全球衛星導航系統<br>GPS navigation system                                                 | 3 | 3 | 深度學習<br>Deep Learning                                              | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 微波工程<br>Microwave Engineering                                                     | 3 | 3 | 微機電系統概論<br>INTRODUCTION TO MEMS ( Micro-electromechanical systems) | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 高階微處理機應用<br>Advanced Microprocessor Application                                   | 3 | 3 | 無人機建模與飛行模擬<br>Drone Modeling and Flight Simulation                 | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 高等電磁學<br>Advanced Electromagnetism                                                | 3 | 3 | 地面導控站軟體設計<br>Ground Control Station Software Design                | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 數值電磁學<br>Computational Electromagnetics                                           | 3 | 3 | 航空工程實務<br>Aircraft Engineering Practice                            | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 最佳控制設計<br>Optimal control design                                                  | 3 | 3 | AI 系統建模與應用<br>AI Modeling and Applications                         | 3 | 3 |                  |  |  |          |  |  |    |

| 學年<br>Academic<br>Year | 第一學年 First Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |   |                                                                      |   |   | 第二學年 Second Year |  |  |          |  |  | 小計 |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|----------------------------------------------------------------------|---|---|------------------|--|--|----------|--|--|----|
| 學期<br>semester         | 上 First                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |   | 下 Second                                                             |   |   | 上 First          |  |  | 下 Second |  |  |    |
|                        | 電力電子模擬與分析<br>Simulation and Analysis of Power Electronics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3 | 3 | 機器學習與生成式人工智慧導論<br>Introduction to Machine Learning and Generative AI | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 航空影像辨識系統<br>Aerial image identification systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3 | 3 | 旋翼機飛行力學<br>Rotorcraft Flight Dynamics                                | 3 | 3 |                  |  |  |          |  |  |    |
|                        | 振動分析<br>Vibration analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 射頻電路設計<br>Radio-frequency Circuit Design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 無人機通訊原理<br>Drone Principle of Communication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | VTOL 無人機系統設計與操控<br>System Design and Operation of VTOL UAV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 微機電元件概論<br>Design Principles of MEMS Devices                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 定翼無人機飛行力學與操控實務<br>Fixed-wing UAV flight mechanics and control practice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 無人機智慧自主飛行技術<br>Autonomous Flight Technology of Drone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 飛行動態模擬<br>Dynamic Flight Simulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 數位信號處理實務<br>Practice Digital Signal Processing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 飛機性能分析與設計<br>Aircraft performance and Design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
|                        | 無人機智慧製造應用<br>Smart Manufacturing Applications in Unmanned Aerial Vehicle Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 | 3 |                                                                      |   |   |                  |  |  |          |  |  |    |
| 附註<br>Note             | 一、本系碩士班研究生最低畢業總學分數為 30 學分，其中必修包含論文 6 學分及四學期之專題研討，選修至少修滿 24 學分，並須通過碩士學位考試。<br>1.The minimum credit hours required for graduation is 30 credits, of which the compulsory courses include 6 credits for thesis and seminars for all four-semester, at least 24 credits for elective courses, and a master's degree exam.<br>二、經指導教授同意得修習外系所碩博士班之開授課程，其學分得承認列入畢業學分計算，唯以 12 學分為限，外籍生不受學分數限制。<br>2. With the consent of the advisors, credits earned from courses in other department's master's or doctoral programs can be recognized and counted towards graduation requirement, up to a maximum of 12 credits. There is no limit on the number of credits for foreign students.<br>三、外國學生須於畢業前修畢「華語教學(一)」及「華語教學(二)」，不計入本系畢業學分。相關規定詳「外國學生修讀華語課程實施要點」。<br>3. International Students of NFU are required to take and pass "Mandarin (1)" and "Mandarin (2)" courses before graduation, not counted forward graduation credits. For more details, please refer to "Mandarin Course Requirements for NFU International Students". |   |   |                                                                      |   |   |                  |  |  |          |  |  |    |