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| **Department of Mechanical Engineering,National Chung Hsing University**  **Graduation Requirements for Master Students Enrolled after 2025** | |
| **Items** | **Notes** |
| 1. Period of study:    1. Minimum years of period of study: 1 year    2. Maximum years of period of study: 4 years (excluding 2 years of suspension) | Part-time students may apply for a one-year extension of study. |
| 1. Minimum credits for graduation: 30 credits (physical education and citizen national defense education are not included), including:    1. Courses:   minimum of required credits: 0 ;  minimum of elective credits: 24 .   * 1. Master Thesis: 6 credits | Students are considered to have passed both academic and conduct assessment with the grade of 70 or above. Students who fail in conduct will be dismissed.  The average of academic grades comprises 50 % of the overall graduation grades.  \*Only English-taught courses will be recognized as graduation credits.  \*Required credits+ Elective credits + Master Thesis = minimum credits for graduation |
| III. Transfer credits: maximum 24 credits | According to NCHU Regulation for Credits Exemption, students should apply for credits exemption prior to the deadline of course add/drop. |
| IV. Undergraduate credits from discipline-related courses may be counted as graduation credits. | According to NCHU Regulation on Course Registration, the number of credits students should take is determined by their advisor or the department chairperson. Students who need to take undergraduate courses for research purposes, besides the credits for graduation, may take undergraduate courses with the consent of the instructor. The course may be counted as graduation credits after obtaining the approval form the advisor, and relevant department committee. Nevertheless, the maximum for such undergraduate credits: 6 credits.  If graduate students take advanced courses as defined by the NCHU Regulations for Curriculum Planning and Course Opening, a maximum of 12 credits can be counted. |
| V. Recognition of credits from other departments/graduate institutes: maximum 6 credits | Including inter-university credits. |
| VI. Core courses and credits: credits   |  |  | | --- | --- | | Core Course Title | Credits | | 1. Special Topics in Mechanical Engineering (I) | 0 | | 2. Thesis | 6 |   **依「國立中興大學機械工程學系碩士班修課辦法」辦理**  According to the " National Chung Hsing University Department of Mechanical Engineering, Master’s Program Course Regulations. ".  **依「國立中興大學機械工程學系碩士生修業規章」辦理。**  In accordance with the " National Chung Hsing University, Department of Mechanical Engineering, Master's Program Regulations. " | 1. Students who fail the core courses should retake core courses. 2. Students who don’t complete core courses cannot graduate. |
| VII. Prerequisite Courses (not included in graduation credits): credits  **依「國立中興大學機械工程學系碩士班補修課程規章」辦理**  According to the " National Chung Hsing University Department of Mechanical Engineering,Regulations for Remedial Courses in the Master's Program. " | According to NCHU Master's Program Regulations, students should take certain prerequisite courses at the undergraduate level, which are decided by advisors and chairperson. Prerequisite credits will not be counted as graduation credits. Students are not eligible to attend the thesis defense until they complete the prerequisite courses. |
| 1. Thesis Defense:    1. Students should discuss with their advisors prior to the end of first academic year.    2. Students must get the certification of “Education on Academic and Research Ethics” course before the application of the oral defense.    3. Students who complete minimum of enrollment, fulfill graduation credits, and complete the draft of thesis should apply for oral defense at least 20 days prior to the oral defense. The passing grade for defense is 70. | Oral defense comprises 50% of graduation grade.  Students must learn “Education on Academic and Research Ethics” course and take the exam to obtain the certificate form the Center for Taiwan Academic Research Ethics Education website. Each department may additionally require the completion of professional academic research ethics education workshops, which will be implemented according to the regulations established by each department.  Master thesis should be written in English and oral defense should be carried out in English. Students who fail oral defense within enrollment should retake it next semester or year. If students who retake oral defense fail again, their study will be terminated. The grade of those who pass retaking the oral defense is uniformly calculated at 70. |
| IX. Others: |  |

Coordinator 系(所、學位學程)承辦人： Chairperson 系所主管簽章： Date： 年 月 日

機械工程學系碩士班畢業條件明細表(113學年度起入學適用) 專業選修科目列表114.02.12更新

List of graduation requirements for the master's program of the Department of Mechanical Engineering (applicable for admission from the 113th academic year) List of professional elective subjects

| Course Title | Semester (Credits) |
| --- | --- |
| 1. 高等工程數學（一）   Advanced Engineering Mathematics(I) | Semester:1  Credits:3 |
| 1. 設計靈敏度分析   Design Sensitivity Analysis |
| 1. 製造性設計   Design for Manufacturing |
| 1. 高等動力學   Advanced Dynamics |
| 1. 實驗應力分析   Experimental Stress Analysis |
| 1. 固體力學導論   Fundamentals of Solid Mechanics |
| 1. 工程數值法   Numerical Methods for Engineering Application |
| 1. 流體力學導論   Fundamentals of Fluid Mechanics |
| 1. 磨潤工程   Engineering Tribology |
| 1. 類神經網路原理與應用   Theory and Application of Neural Network |
| 1. 最佳控制   Optimal Control |
| 1. 電腦輔助運動學與動力學   Computer-Aided Kinematics and Dynamics of Mechanical Systems |
| 1. 電子構裝   Electronics Packaging and Equipment |
| 1. 電動機械控制   Control of Electrical Drives and Machines |
| 1. 數位訊號處理   Digital Signal Processing |
| 1. 電腦輔助工具   CAD/CAM Tools |
| 1. 電腦輔助製造   Computer Aided Manufacturing |
| 1. 生產工程   Production Engineering |
| 1. 切削原理   Metal Cutting Principles |
| 1. 公差工程   Tolerancing Engineering |
| 1. 電腦視覺   Computer Vision |
| 1. 機械特論   Special Topics in Mechanical Engineering |
| 1. 微機電系統   Micro-Electro-Mechanical System |
| 1. 高等工程數學（二）   Advanced Engineering Mathematics (II) |
| 1. 高等熱傳學   Advanced Heat Transfer |
| 1. 高等材力   Advanced Mechanics of Materials |
| 1. 複合材料力學   Mechanics of Composite Materials |
| 1. 板殼力學   Plates and Shells |
| 1. 最佳化設計   Optimum Design |
| 1. 電腦輔助設計   Computer-aided Design | Semester:1  Credits:3 |
| 1. 高等機構設計   Advanced Mechanism Design |
| 1. 雷射全像光學精密量測   Holographic Interferometry |
| 1. 流體力學專論   Special Topics in Fluid Mechanics |
| 1. 熱工系統設計   Design of Thermal Systems |
| 1. 熱對流學   Convective Heat Transfer |
| 1. 紊流理論   Turbulence |
| 1. 噴射推進   Jet Propulsions |
| 1. 模糊控制   Fuzzy Control |
| 1. 非線性控制   Nonlinear Control Systems |
| 1. 線性系統   Linear Systems |
| 1. 數位控制系統   Discrete-time Control Systems |
| 1. 適應控制   Adaptive Control |
| 1. 精密機械設計原理   Principles of Precision Machine Design |
| 1. 實體模型化   Solid Modeling |
| 1. 電腦整合製造   Computer Integrated Manufacturing |
| 1. 工程實驗設計與分析   Design and Analysis of Engineering Experiments |
| 1. 精密量測   Precision Dimensional Metrology |
| 1. 微感測器與微致動器   Microsensors and Microactuators |
| 1. 半導體微系統技術   CMOS-MEMS Technology |
| 1. 計算流體力學   Computational Fluid Dynamics |
| 1. 微系統設計與分析   Design and Analysis of **Microelectromechanical System** |
| 1. 先進能源技術   Advanced Power Generation Technology |
| 1. 主動噪音控制系統   Active Noise Control Systems |
| 1. 自動光學檢測   Automatic Optical Inspection |
| 1. 奈米生醫   Nanobiotechnology |
| 1. 微熱流科學   Microscale Thermal Fluid Sciences |
| 1. 智能材料結構之設計與分析   Smart Material Structures: Modeling, Design and Control |
| 1. 真空系統   Fundamentals of Vacuum Science and Technology | Semester:1  Credits:3 |
| 1. 光學系統與元件技術   Optical System and Device Technology |
| 1. 醫療器材設計實務   Medical Devices Design and Practice |
| 1. 光學信號處理原理與應用   Principles and applications of the optical signal processsing |
| 1. 彈性力學   Elasticity |
| 1. 多軸複合化加工技術   Mutli-axis and multi-tasking machining technology |
| 1. 機械系統時頻分析與診斷   Time-frequency analysis on machinery diagnosis |
| 1. CNC伺服運動控制導論   Fundamental of CNC Servo Motion Control |
| 1. 系統鑑別   System Identification |
| 1. 可靠度工程   Reliability Engineering |
| 1. 智慧型控制系統設計   Intelligent Control System Design |
| 1. 工具機結構與振動   Machine Tool Structures and Vibrations |
| 1. 感測器原理、設計與應用   Principle, Design and Application of Sensors |
| 1. 最佳化方法   Optimization Methods |
| 1. 電聲學   Electroacoustics |
| 1. 智慧輔助科技   Intelligent Assistive Technology |
| 1. 人工智慧導論   Introduction of Artificial Intelligence |
| 1. 高等振動學及模態分析   Advanced Vibration Engineering and Modal analysis |
| 1. 輻射熱傳學   Thermal Radiation Heat Transfer |
| 1. 精密加工   Precision Fabrication | 半學年3學分課程。  1.研究所選課代碼開頭為 6~7  2.進階課程選課代碼開頭為 5  **依選課辦法，碩士生修習進階課程計入畢業學分數以12學分為限。**  Half-Semester 3-Credit Courses  1.Course codes for graduate-level courses start with 6 to 7.  2. Advanced undergraduate course codes start with 5.  According to the course selection regulations, graduate students may count up to 12 credits from advanced undergraduate courses. |
| 1. 動態系統   Dynamical Systems |
| 1. 精密工具機技術專論   Special Topics in Machine Tools |
| 1. 高等熱力學   Advanced Thermodynamics |
| 1. 燃燒工程   Combustion Engineering |
| 1. 有限元素法   Finite Element Method |
| 1. 光學原理   Principles of Optics |
| 1. 黏性流體力學   Viscous Fluid Flow |
| 1. 生醫微機電   Bio microelectromechanical systems |
| 1. 微尺度操控技術   Manipulation of micro-scale objects using microfluidics |
| 1. 機械製造分析   Analysis of Mechanical Manufacturing |
| 1. 高等金屬成型理論   Advanced Theories of Metal Forming |
| 1. 應用塑性力學   Applied Plasticity |
| 1. 光機電工程概論   Introduction to Opto-Mechatronics |
| 1. 現代控制工程   Modern Control Engineering |
| 1. 伺服控制工程   Servo Control Engineering |
| 1. 虛實整合數位化工廠   Cyber-Physical Factory |
| 1. 工具機製造品質工程   Quality Engineering of Machine Tools and Manufacture |
| 1. 營運管理與製造執行系統   Operation Management and Manufacturing Execution Systems |
| 1. 工具機系統設計分析   Design and Analysis of Machine Tools |
| 1. 整線整合之伺服控制工程   Servo Control Engineering in Integrated Production Line |
| 1. 產線加工應用之誤差分析、量測與補償   Error Analysis, Compensation, and Measurement for Precision Machines and Production Line |
| 1. 半導體製程設備與技術   Semiconductor Manufacturing Equipment and Technology |
| 1. 無人機技術   Drone Technologies |
| 1. 機器學習運營與實踐   Machine Learning Operations and Practice |
| 1. 量測系統原理與設計   Theory and Design of Measurement Systems |
| 1. 機械振動學   Mechanical Vibration |
| 1. 半導體製程設備導論   Introduction to Semiconductor Process Equipments |
| 1. 智慧型機器人   Introduction to Intelligent Robots |
| 1. 製造聯網整合技術   Network and Control System for Manufacturing |
| 1. 數據分析與機器學習   Data Analysis and Machine Learning |
| 1. 複合製程整線智慧診斷   Advanced Manufacturing Process Monitoring |
| ◎備註:1.本系最低應選修 24 學分。2.以上選修科目來自課程規劃，可能未成班或停開。  Notes: 1. At least 24 credits should be taken in this department. 2. The above elective subjects come from the curriculum planning, and may not be completed or suspended. | |