

機械工程系博士班 112 學年度入學課程結構規劃表
2023 Curricula for the Ph.D. Program in Mechanical Engineering Department, College of Engineering

課程類別 Course Category				一年級 1 st Academic Year						二年級 2 nd Academic Year						三年級 3 rd Academic Year					
				第一學期 Semester 1			第二學期 Semester 2			第一學期 Semester 1			第一學期 Semester 1			第二學期 Semester 2			第一學期 Semester 1		
				課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours	課程名稱 Course Name	學分數 Credits	時數 Hours
	必修 Required	一般學程/領域 General group Program/ Specialty	應修學分數 Number of 15Credits Needed	專題研討 Seminar(一)	2	2	專題研討 Seminar(二)	2	2	專題研討 Seminar(三)	2	2	專題研討 Seminar(四)	2	2						
				研究方法 Research Methodology	1	1						論文 Ph.d thesis	6	6							
系專業 課程 Departmental Professional Courses	選修 Elective	一般學程/領域 General group Program / Specialty	應修學分數 Number of 18Credits needed	電腦繪圖學 Computer Graphics/3/3、有限元素法 Finite Element Method /3/3、製造系統工程 Manufacturing System Engineering /3/3、遠距網路製造 Remote Networked Manufacture /3/3、田口式品質設計方法 Taguchi Quality Design Method /3/3、影像處理與機械視覺 Image Processing and Machine Vision /3/3、專利策略與實務 Patent Strategy and Practice /3/3、工程分析 Engineering Analysis /3/3、熱傳導學 Conductive Heat Transfer /3/3、計算流體力學 Computational Fluid Dynamics /3/3、光電工程 Optoelectronic Engineering /3/3、線性系統 Linear System /3/3、最佳控制 Optimal Control /3/3、機電學 Principle of Mechatronics /3/3、奈米材料 Nano-materials /3/3、微系統工程 Microsystem Engineering /3/3、機器人機構之分析與設計 Design and Analysis of Robot Mechanisms /3/3、高分子加工 Polymer Processing /3/3、陶瓷材料 Ceramic Materials /3/3、資料分類演算法 Algorithms for Clustering Data /3/3、工具機靜壓軸承設計 Hydrostatic Bearing Design for Machine Tools /3/3、壓力容器安全工程 Safety Engineering of Pressure Vessel /3/3、幾何光學 Geometric optics /3/3、光學照明系統 Optical Illumination Systems /3/3、光學成像系統 Optical Imaging Systems /3/3、靜壓潤滑 Hydrostatic Lubrication /3/3、機構原理與設計 Theory and Design of Mechanisms /3/3、半導體製程與設備 Manufacturing Processes and Equipments of Semiconductor /3/3、微奈米製造與檢測技術 Micro & Nano Fabrication and Measurement Technology /3/3、高等機構設計 Special Project On Advanced Mechanism Design /3/3、高等動力學 Advanced Dynamics /3/3、齒輪原理與設計 Theory and Design of Gearing /3/3、計算動力學 Computational Dynamics /3/3、電腦輔助幾何設計 Computer-Aided Geometric Design /3/3、應用塑性力學 Applied Plasticity /3/3、電腦整合製造 Computer Integrated Manufacturing /3/3、黏性流體力學 Viscous Fluid Mechanics /3/3、平面顯示器原理與製程 Flat Panel Display Technology and Manufacturing /3/3、光電檢測 Photo-electric Inspection /3/3、非線性控制 Nonlinear Control /3/3、電磁學 Electromagnetics /3/3、機電系統動力學 Dynamics of Mechatronic System /3/3、振動控制 Vibration Control /3/3、數位控制 Digital Control /3/3、潤滑理論 Lubrication Theory /3/3、微觀力學 Micro Mechanics /3/3、電子陶瓷電子陶瓷/3/3、微機電材料 Material of MEMS /3/3、奈米工程 Nanotechnology /3/3、半導體元件與材料 Semiconductor device and Materials /3/3、專利迴避設計特論 Special Topics On the Patent Design-Around /3/3、模糊系統與控制 Fuzzy System and Control /3/3、微機電系統設計 MEMS(Micro-																	

				Electro-Mechanical-System) Design /3/3、冷凍空調原理 Principles of Refrigeration and Air-conditioning /3/3、專利爭議案例之比較研究 Comparative Study of Patent Dispute Cases /3/3、太陽能工程 Solar Engineering /3/3、科技論文英語寫作 Technical Writing and Communication in English /3/3、彈性力學 Elasticity /3/3、機構原理與設計 Theory and Design of Mechanisms /3/3、奈米結構設計與分析 Design and Analysis for Nano-structure /3/3、對流熱傳學 Convective Heat Transfer /3/3、工程磨潤學 Engineering Tribology /3/3、進階幾何光學 Advanced Geometrical Optics /3/3、半導體物理與元件 Semiconductor Physics and Devices /3/3、最佳化設計 Optimum Design/3/3、產品設計與製造 Product Design and Manufacture /3/3、輻射熱傳學 Radial Heat Transfer /3/3、微觀熱傳 Micro Heat Transfer /3/3、熱傳增強原理 Heat Transfer Enhancement /3/3、微感測器 Microsensor/3/3、適應控制 Adaptive Control /3/3、雷射加工專題 Special Topics On Laser Machining /3/3、壓電致動器原理與應用 Principle and Application of Piezoelectric Actuator /3/3、微機電製程 MEMS Fabrication Process /3/3、材料破壞理論 Theory of Material Fracture /3/3、光電材料 Materials for Photo-electric Applications /3/3、X-光繞射分析 X-Ray Diffraction Analysis /3/3、X-光結晶學 X-Ray Diffraction /3/3、技術發展與知識管理 Technology Development and Knowledge Management /3/3、伺服晶片設計 Servo Chip Design /3/3、變結構控制 Variable Structure Control /3/3、振動力學 Mechanics of Vibration /3/3、模態分析 Modal Analysis /3/3
	選修 Elective	國際組學程/領域 International group Program / Specialty	應修學分數 Number of 18Credits needed	電腦輔助設計 Computer Aided Design /3/3、高分子材料加工 Polymer Material and Processing /3/3、最佳化設計 Optimum Design /3/3、製造系統工程 Manufacturing System Engineering /3/3、產品設計與製造 Product Design and Manufacture /3/3、電腦整合製造 Computer Integrated Manufacturing /3/3、機電學 Principle of Mechatronics /3/3、逆向工程 Reverse Engineering /3/3、模具設計 Die & Mold Design /3/3、知識管理 Topics on Knowledge /3/3、作業管理 Operation Management /3/3、機器學習 Machine learning /3/3、生產系統設計 Design of Production Systems /3/3、微細加工技術 Micro Machining Technology /3/3、材料特論 Specific Theory of Material/3/3、機構原理與設計 Theory and Design of Mechanisms /3/3、微機電製程 Machining Process of MEMS /3/3、精密金屬成型 Precision Metal Forming /3/3、有限元素法 Introduction to the Finite Element Method /3/3、靜壓潤滑 Hydrostatic Lubrication /3/3、研究方法 Research Methodology /3/3、機電整合 Mechatronics /3/3、科技管理 Management of Technology /3/3、系統性創新方法 Systemic Innovation /3/3、品質管理 Quality Control /3/3、控制系統設計與模擬 Control System Design and Simulation /3/3、平面顯示器原理與製程 Flat Panel Display Technology and Manufacturing /3/3、人工智慧 Artificial Intelligence Theory /3/3、潤滑理論 Lubrication Theory /3/3、精密工具機設計原理 Design Principles of Precision Machine Tools /3/3、電子設計 Electronic Design /3/3、電路設計 Electrical Circuit Design /3/3、光電元件 Electronic Devices /3/3、配電自動化 Distribution Automation /3/3、機器人學 Introduction to Robotics /3/3、影像處理 Image processing /3/3、精密製造 Precision Manufacturing /3/3、光電工程 Photo-Electric Engineering /3/3、微機電系統工程 Micro-Electro-Mechanical Systems /3/3、模態分析 Modal Analysis /3/3

備註 Notes：

- 一、畢業總學分數為 33 學分。Minimum credit required to graduate: 33.
- 二、必修 15 學分，選修 18 學分。Required courses: 15 credits; elective courses: 18 credits.
- 三、學生修讀所屬學院之「學院共同課程」應認列為本系專業課程學分；修讀所屬學院之「學院跨領域課程」或其他學院開課之課程，則認列為外系課程學分。Credits earned by students from the common courses offered by their respective colleges shall be accepted

as their affiliated department's professional courses. However, credits earned from interdisciplinary courses offered either by their college or by other colleges will be accepted as credits earned from departments outside their own.

四、系所訂定條件（學程、檢定、證照、承認外系學分、擋修規定、各教學分組之畢業應修學分數及其他）：Departmental requirements (Ex: programs, certifications, licenses, recognition of external department credits, prerequisite requirements, Credits needed for each teaching division, and other requirements):

（一）國際組選修科目為全英文上課。Elective subjects for the international group are taught entirely in English.

（二）非本系開設之專業選修課程可承認 3 學分。唯修習智慧機電學院、工學院與電資學院全英文課程，最多承認 9 學分。

Offered by other departments that a student takes, a maximum of 3 credits are recognized by the institute. As an exception, courses taught in English, which offered by College of Intelligent Mechanical and Electrical Engineering or College of Engineering or College of Electrical Engineering and Computer Science, could be recognized for up to 9 credits

（三）外籍生經指導教授許可，得選修校內所開設之全英授課課程且無學分限制，但須含智慧機電學院、工學院與電資學院之全英授課課程至少 12 學分以上。With the permission of thesis advisor, foreign students can take intramural English-taught courses. Among them, at least 12 credits should be offered by the College of Intelligent Mechanical and Electrical Engineering or College of Engineering or College of Electrical Engineering and Computer Science.