

前瞻工程全英語碩士學位學程					
課程名稱				英文課名	
無人載具氣動力設計				Aerodynamic Design of Unmanned Aerial Vehicles	
開課教授	開課學制	全英語	是否為程式設計課程	時間	地點
劉益仲	碩士	是	否	週五 18:00-2100	創新大樓 105
備註 (先修課程等等)		1 工程數學(Engineering Mathematics) 2.基礎力學(fundamental Mechanics) 3.流體力學(fluid Mechanics)			
課程大綱： 本課程透過理論講述與實際設計案例進行固定翼無人機氣動力設計教學，內容包含、機翼外型與翼剖面擇優分析、全機外型設計、任務規劃與重量預估分析、及基本六自由度氣動力參數分析等，培養學生具備無人機外型設計與氣動力參數分析能力。					
Course Content: This course provides comprehensive instruction in the aerodynamic design of fixed-wing unmanned aerial vehicles (UAVs) through a combination of theoretical principles and practical aircraft design case studies. Topics include wing planform design and airfoil selection, aircraft configuration design, mission analysis and weight estimation, and the evaluation of fundamental six-degree-of-freedom Aerodynamic characteristics. Students will develop the ability to perform conceptual aircraft design and aerodynamic performance analysis, establishing a solid foundation for the design and development of fixed-wing UAVs.					
參考書籍： 1. General Aviation Aircraft Design Applied Methods and Procedures 2. Fundamentals of Aircraft and Airship Design 3. Aircraft Design: A systems Engineering Approach					
教學方式： 自製上課講義教學					
週次	課程內容				
1	固定翼飛行器幾何外型組合要件		Geometric Configuration Design Elements of Fixed-Wing Aircraft		
2	任務規劃與重量預估分析		Mission Planning and Weight Estimation		
3					
4	飛行性能簡介		Introduction to Flight Performance		
5	翼剖面與機翼外型擇優設計		Airfoil Selection and Wing Planform Design		
6					

7	水平安定面與垂直安定面優化分析	Horizontal and Vertical Tail Design and Sizing
8		
9	起落架設計與重心配置分析	Landing Gear Design and Center-of-Gravity (CG) Analysis
10	期中考	Midterm exam
11	飛行靜穩定性分析	Static Stability Analysis of Fixed-Wing Aircraft
12		
13	飛操控制舵面設計分析	Flight Control Surface Design and Analysis
14		
15	六自由度氣動力參數分析	Six-Degree-of-Freedom (6-DOF) Aerodynamic Derivatives Analysis
16		
17	期末報告	Final report
18		