

教學計畫書 Syllabus

98.08.24-98.11.13.

課號	EM3240	學分 credit	3	時數 hour	3
中文課名	振動力學		Course name	Mechanics of Vibration	
授課教師 instructors	徐慶瑜(Hsu, Ching-Yu, B108)		選/必修 Selection	必修 Required course	
類別	中文		英文		
學校 教育 使命 與本 課目 的關 係	<ol style="list-style-type: none"> 1. 科技知識—力學內容 2. 明晰的思維邏輯—分析情境、簡化問題 3. 創造能力—思考挑戰問題、設計解決問題 4. 領導統御風範—小組分工、學習服從與團隊精神、完成使命 		<ol style="list-style-type: none"> 1. Sci-Tech knowledge: <i>mechanics content</i> 2. Clear reasoning logics: <i>context analysis & simplifying problem,</i> 3. Creative capabilities: <i>thinking challenge problems & design how to solve them,</i> 4. Leadership style: <i>teamwork learning, deferring to leaders, & completing</i> 		
課程 目標	<ol style="list-style-type: none"> 1. 透過振動學課程的教授,培養學生對工程問題的邏輯思考及解算能力。 2. 本課程經由對離散系統的研究,介紹振動學的基本原理及其應用。 3. 課程 涵蓋:系統模擬,動態特性的分析,自然頻率、模態的求取與應用,連續系統的振動分析,以及如何量測系統的動態特性參數。 4. 培養同學適應未來深造、自我進修的基礎 		<ol style="list-style-type: none"> 1. By teaching this course the student can be trained to process the logical thinking and the ability to solve the engineering problem 2. This course introduces the basic theory and application for the mechanical vibration system. 3. The knowledge for the system simulation, the analysis for the dynamics characters of the machine and structure, how to get and apply the natural frequency and mode shape, the vibration analysis of the continue system and how to measure the dynamics data of the vibration system are included in the course. 4. The students will be trained to have the ability to pursue advanced studies and to study the other knowledge by themselves. 		

本課程可培養學生之核心能力	<ol style="list-style-type: none"> 1. 具備艦船工程及動力系統基礎學理 2. 理解艦船工程及動力系統相關數學、基礎科學及工程知識的能力 3. 運用艦船工程及動力系統相關知識，發掘、分析與解決問題的能力 	<ol style="list-style-type: none"> 1. Acquiring an understanding of the disciplines on naval architecture and power system 2. Understanding naval architecture and power system on a foundation of math, science and engineering knowledge 3. Applying knowledge of naval architecture and power system to identify, formulate and solve problems
先修科目	工程數學、應用力學、材料力學	Engineering Mathematics, Engineering Mechanics (statics and dynamics), Mechanics of Materials
課程大綱	<ol style="list-style-type: none"> 1. 振動之觀念 2. 自由振動 3. 簡諧激振 4. 1 自由度系統 5. 2 至多自由度系統 	<ol style="list-style-type: none"> 1. Concepts from Vibration 2. Free Vibration 3. Harmonically Excited Vibration 4. Systems with One Degrees of Freedom 5. Systems with Two or More Degrees of Freedom
指定用書	Thomson & Dahleh, “Theory of Vibration with Applications”, 5th ed., , Prentice Hall Inc., 1998, ISBN 0-13-651068-x, 1998	
參考書籍	<ol style="list-style-type: none"> 1. Singiresu S. Rao, “Mechanical Vibration”, Pearson/Prentice Hall, 2005, ISBN 013-196751-7 2. Leonard Meirovitch, “Fundamentals of Vibration, McGraw Hill , International Edition 2001, ISBN 0-07-041345-2 	
教學方式	課堂授課、討論、課後回饋測驗	Class instruction, discussion, after-class feedback

教 學 進 度	1 週	課程介紹 振動之觀念	Introduction Concepts from Vibration
	2 週	振動之觀念	Concepts from Vibration
	3 週	振動之觀念	Concepts from Vibration
	4 週	振動之觀念	Concepts from Vibration
	5 週	自由振動	Free Vibration
	6 週	自由振動	Free Vibration
	7 週	簡諧激振	Harmonically Excited Vibration
	8 週	簡諧激振	Harmonically Excited Vibration
	9 週	期中考	Midterm examination
	10 週	期中考檢討 1 自由度系統	Review for Midterm examination Systems with One Degrees of Freedom
	11 週	1 自由度系統	Systems with One Degrees of Freedom
	12 週	1 自由度系統	Systems with One Degrees of Freedom
	13 週	1 自由度系統	Systems with One Degrees of Freedom
	14 週	2 至多自由度系統	Systems with Two or More Degrees of Freedom
	15 週	2 至多自由度系統	Systems with Two or More Degrees of Freedom
	16 週	2 至多自由度系統	Systems with Two or More Degrees of Freedom
	17 週	2 至多自由度系統	Systems with Two or More Degrees of Freedom
	18 週	期末考	Final examination

成績評核 方式 assessment	作業及上課情形 30% 期中考 30% 期末考 40%	Homework & Attendance 30% Midterm exam 30% Final exam 40%
教學評量 工具 Assessment Tools	評量工具說明： 由授課教師訂定。	Assessment Tools description: To be determined by professor
諮詢時間 office hour	每週二下午 0330-0530 固體力學實驗室	0330-0530 pm in Thursday Solid Mechanics Lab.