

教學計畫書 Syllabus

2014.01.13-2014.05.30

課號	EM3220	學分 credit	2	時數 hour	2
中文課名	結構學		Course name	Structural Analysis	
授課教師 instructors	徐慶瑜(Hsu, Ching-Yu, B105)		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 commission.</i> 		
課程 目標	<ol style="list-style-type: none"> 1. 透過材料力學課程的教授,培養學生對工程問題的邏輯思考及解算能力。 2. 可了解並預測工程結構材料受力後的反應行為 3. 培養爾後使用或設計機械結構所需之基本知識。 4. 培養同學適應未來深造、自我進修的基礎 5. 本課程教學目標的「重點」,於教師教學自我檢視表中,屬於「高層次思考技巧(Higher-Order Thinking Skills)」中第1、2、5、6、7、8項檢視項目所欲達成的學生學習目標。 		<ol style="list-style-type: none"> 1. By teaching this course students can be trained to process the logical thinking and the ability to solve the engineering problem. 2. The students could understand and predict the response of the engineering material and structure under loading. 3. The students will have the basic knowledge to use and design the mechanical structure in the future. 4. The students will be trained to have the ability to pursue advanced studies and to study by himself. 5. The most important teaching goal of this course is categorized in the “Higher-Order Thinking” cluster in the “Teaching Goal Inventory” check list number 1, 2, 5,6,7,8. 		

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 4. 培養學生具備實務能力 	<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 4. Utilizing practical skills
先修科目	微積分、工程力學、材料力學	Calculus, Engineering Mechanics, Mechanics of Material
課程大綱	<ol style="list-style-type: none"> 1. 設計負荷 2. 結構靜力學-支承反應力 3. 桁架、纜索、拱架 4. 樑與構架 5. 靜定結構及靜不定結構之分析 6. 能量法 7. 變位分析 	<ol style="list-style-type: none"> 1. Design Loads 2. Statics of Structure- Reaction 3. Trusses, Cables, Arches 4. Beams and Frames 5. Analysis of Statically Determinate and Indeterminate Structures 6. Energy Method 7. Deflections Analysis
指定用書	R.C. Hibbeler, "Structural Analysis, 8th Edition in SI Units", ISBN 0-13-257053-4, Prentice Hall, 2012	
參考書籍	<ol style="list-style-type: none"> 1. Kenneth Leet, Chia-Ming Uang and Anne M. Gilbert, "Fundamentals of Structural Analysis", McGraw-Hill, 3rd Edition, ISBN 978-007-125929-3, 2008 2. 徐耀賜, "結構系統", 全華圖書, 2000 3. 鄒承曾, "鋼結構設計學", 詹氏書局, 1985 4. 謝元裕, "新版結構基本理論", 文笙書局, 1987 	
教學方式	課堂授課、討論、課後回饋測驗、物理實驗設計	Class instruction, discussion, after-class feedback

教 學 進 度	1 週	課程介紹 結構及負荷類型介紹	Introduction Types of Structures and Loads
	2 週	結構及負荷類型介紹	Types of Structures and Loads
	寒假		
	3 週	靜定結構之分析	Analysis of Statically Determinate Structures
	4 週	靜定桁架結構之分析	Analysis of Statically Determinate Trusses Structures
	5 週	結構元件之內部負荷	Internal Loading Developed in Structural Members
	6 週	纜繩與拱架	Cables and Arches
	7 週	靜定結構之影響線	Influence Lines for Statically Determinate Structures
	8 週	靜定結構之影響線 期中複習	Influence Lines for Statically Determinate Structures Midterm Review
	9 週	期中考 (2014. 03. 24-2014. 03. 28)	Midterm examination (2014. 03. 24-2014. 03. 28)
	10 週	期中考檢討 靜不定結構之近似分析	Review for Midterm examination Approximate Analysis of Statically Indeterminate Structures
	11 週	靜不定結構之近似分析	Approximate Analysis of Statically Indeterminate Structures
	12 週	變位	Deflections
	13 週	變位	Deflections
	14 週	變位(能量法)	Deflections Using Energy Methods
	15 週	變位(能量法)	Deflections Using Energy Methods
	16 週	力法分析靜不定結構	Analysis of Statically Indeterminate Structures by Force Method
	17 週	力法分析靜不定結構 期末複習	Analysis of Statically Indeterminate Structures by Force Method Final Review
18 週	期末考 (2014. 05. 26-2014. 05. 30.)	Final examination (2014. 05. 26-2014. 05. 30.)	

註:本課程將依學生學習狀況，彈性調整課程進度

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 1530-1730 B103	0800-1100 am in Tuesday classroom B103