朝陽科技大學 098學年度第2學期教學大綱
Advanced Structures 高等結構

當期課號	7152	Course Number	7152
授課教師	余志鵬	Instructor	YU,CHIH PENG
中文課名	高等結構	Course Name	Advanced Structures
開課單位	營建工程系碩士班一A	Department	
修習別	選修	Required/Elective	Elective
學分數	3	Credits	3
課程目標	以系統化之方式教導學生，使其了解結構勁度法與柔度法之原理，及其在複雜三維結構上之應用。主要內容包括梁、平面 架與構架、空間 架與構架等之結構分析原理，此外並介紹相關之程式應用。	Objectives	This course emphasizes the systematic approach to the stiffness method and flexibility method, along with its application in complex structures. Specific structural types covered in this course are beam, grid, plane truss, space truss, plane frame, and space frame.
教材	教科書 Matrix Structural Analysis, 2nd Edition, by McGuire et al., Wiley, 2000. 主要參考資料 1. Matrix Structural Analysis, 1st Edition, by McGuire et al., Wiley, 1979. 2. Finite Element Procedures, by Klaus-Jürgen Bathe, Prentice Hall, 1996.	Teaching Materials	Matrix Structural Analysis, 2nd Edition, by McGuire et al., Wiley, 2000.
成績評量方式	Hand-writing Homework 15% (about 7-8 times) Numerical Homework 15% (about 5 times) 1 Semester report 10% (due on final class date) 2 Quizzes 20% Midterm and Final exams 20%×2	Grading	手算作業 15% (about 7-8 times) 數值作業 15% (about 5 times) 學期報告 10% (due on final class date) 小考 20% 期中與期末測驗 20%×2
教師網頁	http://www.cyut.edu.tw/~cpyu		
教學內容	1. Introduction, Definitions And Concepts (1.1-1.2, 2.1-2.3, 3.4, 8.1) 2. Basic Equations: Equilibrium, Compatibility And Constitutive Equations (Class Notes) 3. Review Of The Stiffness Method Of Analysis (2.4-2.6) 4. Stiffness Method And Virtual Work (3.1-3.3, 3.5, 6.1-6.4) 5. The Beam Element (4.5-4.7) 6. Coordinate Transformation; Contragredient And Congruent Transformations (5.1) 7. Equivalent Nodal Loads; Self-Straining Problems; Support Settlement (5.2-5.3) 8. Solution Of Linear Algebraic Equations (11.1-11.6) 9. Virtual Work Principles In Framework Analysis (7.1-7.5) 10. Special Analysis Procedures (13.1-13.6, Class Notes) 11. Element Flexibility Matrix (Class Notes, 4.4) 12. Virtual Force Principles (6.5, 7.6) 13. Introduction To Nonlinear Structural Analysis (8.1-8.3) 14. Eigenvalue Problems (Class Notes) 15. Brief Notes On Analysis Of Curved Beam, Thin-Walled Members	Syllabus	課程主題包括 1. Introduction, Definitions And Concepts (1.1-1.2, 2.1-2.3, 3.4, 8.1) 2. Basic Equations: Equilibrium, Compatibility And Constitutive Equations (Class Notes) 3. Review Of The Stiffness Method Of Analysis (2.4-2.6) 4. Stiffness Method And Virtual Work (3.1-3.3, 3.5, 6.1-6.4) 5. The Beam Element (4.5-4.7) 6. Coordinate Transformation; Contragredient And Congruent Transformations (5.1) 7. Equivalent Nodal Loads; Self-Straining Problems; Support Settlement (5.2-5.3) 8. Solution Of Linear Algebraic Equations (11.1-11.6) 9. Virtual Work Principles In Framework Analysis (7.1-7.5) 10. Special Analysis Procedures (13.1-13.6, Class Notes) 11. Element Flexibility Matrix (Class Notes, 4.4) 12. Virtual Force Principles (6.5, 7.6) 13. Introduction To Nonlinear Structural Analysis (8.1-8.3) 14. Eigenvalue Problems (Class Notes) 15. Brief Notes On Analysis Of

	(Optional, not likely to be taught but if time permits)		Curved Beam, Thin-Walled Members (Optional, not likely to be taught but if time permits)

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