

朝陽科技大學 097學年度第1學期教學大綱  
Numerical Analysis 數值分析

當期課號	7470	Course Number	7470
授課教師	許志宇	Instructor	HSU,CHIH YU
中文課名	數值分析	Course Name	Numerical Analysis
開課單位	資訊與通訊系碩士班一A	Department	
修習別	選修	Required/Elective	Elective
學分數	3	Credits	3
課程目標	<p>數值分析就是介紹如何用電腦來解決數學問題, 從數學的理論與背景推導出解決該問題之各種數值方法, 並探討不同方法之優缺點和適用範圍. 更進一步要求同學寫成程式來做數值實驗, 以評比不同的數值方法. 這是一門數學理論與程式設計並重的課程.</p>	Objectives	<p>This course responds to the needs of the engineering and physical sciences curricula by providing an applications-oriented introduction to numerical methods/analysis. Rather than a pure discussion and analysis of methods, we shall often integrate a discussion of the properties of engineering and physical problems with the discussion of methods by which such problems may be solved numerically. This approach is more "natural" and more like the one students actually follow when applying numerical methods within their areas of interest.</p> <p>Topics in function approximation, nonlinear equations, interpolation, numerical integration and differentiation, and numerical solution of ordinary differential equations will be similarly treated. The discussion of approximate arithmetic and error propagation will also arise in a natural way.</p>
教材	<p>課堂授課及數值計算實作</p> <p>參考書籍 1. Applied Numerical Methods Using MATLAB Published Online: 27 Jan 2005 Editor(s): Yang Author(s): Won Young Yang, Wenwu Cao, Tae-Sang Chung, John Morris</p> <p>2. 程式語言與設計－使用Matlab. 作者：許志宇、楊志弘、鄒奇軒；出版社：博碩；ISBN：9789575279493</p>	Teaching Materials	Notes and homework practices
成績評量方式	作業 40% 小考2次 20% 期末考 20% 期中考 20%	Grading	Homeworks 40% Quizzes 20% Midterm 20% Final 20%
教師網頁	<a href="http://nc.ctl.cyut.edu.tw/xms/">http://nc.ctl.cyut.edu.tw/xms/</a>		
教學內容	<p>1. 讓同學學習以數值方式解決問題 2. 讓同學考慮運用數值方法時所產生的誤差</p> <p>內容將包括 Matlab數值軟體簡介 誤差與Taylor級數 ROOT FINDING(尋根) 插值公式 LINEAR及NONLINEAR SYSTEM解法 數值積分差分公式 ODE(視時間而定)等的解法數值 習作以Matlab數值軟體為主。</p>	Syllabus	Let students learn how to solve a problem numerically, that is, how to develop a sequence of numerical calculations that will give a satisfactory answer. Let students consider errors that arise in these calculations. The topics covered include Errors, Taylor series, Root finding, solving Linear and nonlinear equations, numerical integration and difference, ODE, etc.

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