課程大綱及進度表

開課系所	應數碩
開課學年	101
開課學期	1
課程名稱(中文)	數值分析(一)
課程名稱（英文）	NUMERICAL ANALYSIS(1)
課程碼	L150710
分班碼	
先修科目或先備能力	微積分，線性代數，高等微積分，微分方程
學分數	3
開課教師	侯世章
e-mail	schou@mail.ncku.edu.tw
電話	65139
Office Hours	預約
課程概述	這個課程主要是從數學的觀點來探討科學計算碰到的演算法。
教學目標	讓學生理解各個數值方法背後的數學理論
授課課程大綱明細	- Solution of Nonlinear Equations - Bisection Method - Newton's Method - Secant Method - Fixed Points and Functional Iteration - Computing Zeros of Polynomicals - Approximationg Functions - Polynomial Interpolation

	- Divided Difference - Hermite Interpolation - Spline Interpolation - Best Approximation: Least-Squares Theory - Best Approximation: Chebyshev Theory - Trigonometric Interpolation - Fast Fourier Transform **Numerical Differentiation and Integration** - Numerical Differentiation and Richardson Extrapolation - Numerical Integration Based on Interpolation - Gaussian Quadrature **Numerical Solution of Ordinary Differential Equations** - Taylor Series Method - Runge-Kutta Methods - Multistep Methods - Local and Global Errors: Stability - Boundary Value Problems: Shooting Methods - Boundary Value Prolems: Finite Difference Methods - Boundary Value Problems: Collocation Methods - Linear Differntial Equations

	o Stiff Equations
參考書目	● Numerical Analysis, by Kincaid and Cheney ● Numerical Analysis, by Burden and Faires ● Elementary Numerical Analysis ，by Atkinson and Han
課程要求	
評量方式	期中和期末考各佔 50%
課程網址	
助教資訊	
備註	