

Mat 684: Numerical Analysis II, Spring 2013

Instructor: Dr. Yuesheng Xu

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Class Meeting Time: 2:15-3:35, Monday and Wednesday

Office Hour: 10:30-11:30, Monday and Wednesday

Text book: *Numerical Analysis: Mathematics of Scientific Computing*, by David Kincaid and Ward Cheney, 3rd Edition, Brooks/Cole.

Credit: 3 hours.

Topics Covered by the Course:

- Numerical Solutions of Ordinary Differential Equations:
 - The Existence and Uniqueness of Solutions
 - Taylor-Series Methods
 - Runge-Kutta Methods
 - Multistep Methods
 - Stability Analysis
 - Boundary Value Problems and their Numerical Methods
- Numerical Solutions of Partial Differential Equations:
 - Finite Difference Methods
 - Galerkin Methods
 - First Order Partial Differential Equations: Characteristic
 - Numerical Methods for Hyperbolic Problems
 - Multigrid Method

Grades: Students' grades will be computed based on the percentages:

- Two Exams, 30% each
- Final Exam, 40%
- Two Numerical Projects (or Presentations), 10% each for bonus points