Syllabus

Numerical Analysis
Math 221000-Spring 2006

Instructor: Jesenko Vukadinovic
Office: Eckhart 331
Office Hours: Monday 10:30-11:30, Wednesday 2:30-3:30 and by appointment
Email: vukadino (at) math.uchicago.edu
URL: http://www.math.uchicago.edu/~vukadino

Course Reader: Jonathan Sparling
Office: MS301 (just south of the tennis courts)
Office Hours: TBA
Email: sparling (at) math.uchicago.edu
URL: http://www.math.uchicago.edu/~sparling

Text: Numerical Analysis, Burden & Faires, 8th edition
Website: http://www.math.uchicago.edu/~vukadino/m211.html

General policies: There will be an in-class midterm, a final exam and a final project. Homework will be posted to the web-page and will be due on Fridays. Selected problems will be graded. No late homeworks will be accepted. You are encouraged to work together on homework assignments, but you should write up your solutions independently (clearly and legibly, showing your work). Here is how these items will be weighted:

Homework: 20%
Midterm: 20%
Final Project: 20%
Final Exam: 40%

Tests: Midterm: Monday, April 24 2006, in class
Final Exam: Monday, June 5 2006, 1:30-3:30

Important Note: It is the policy of the Department of Mathematics that the following rules apply to final exams in all undergraduate mathematics courses:
1. The final exam must occur at the time and place designated on the College Final Exam Schedule. In particular, no final examinations may be given during the tenth week of the quarter, except in the case of graduating seniors.

2. Any student who wishes to depart from the scheduled final exam time for the course must receive permission from Paul Sally (office: RY 350, phone: 2-7388, email: sally@math.uchicago.edu). Instructors are not permitted to excuse students from the scheduled time of the final exam except in the cases of an Incomplete.

**Topics:**

1. Solutions of equations (The bisection method, fixed-point iteration and Newton's method)
2. Interpolation (Lagrange and Hermite)
3. Numerical differentiation and integration
4. Methods for solving linear systems (direct and iterative)
5. Approximating eigenvalues (the power method)
6. Initial value problem for ODEs (Euler's method, higher-order Taylor methods, Runge-Kutta methods)