

CS 321-003, Introduction to Numerical Methods, Spring 2007

MWF 1:00am-1:50pm, FPAT 255. www.cs.uky.edu/~jzhang/CS321/cs321.html

INSTRUCTOR: Dr. Jun Zhang, 763F Anderson Hall, e-mail: jzhang@cs.uky.edu
phone: 257-3892, office hours: WF 12:00–1:00pm and by appointment.

THE COURSE IS INTENDED TO:

- 1.) Introduce basic concepts of numerical methods and scientific computing,
- 2.) Explain how, why, and when numerical methods can be expected to work,
- 3.) Provide a firm basis for future study in numerical computation.

TEXT: W. Cheney and D. Kincaid, *Numerical Mathematics and Computing* (5th Ed., earlier editions are OK).

TOPICS:

1. Number representation and errors, Ch. 2,
2. Locating roots of equations, Ch. 3,
3. Interpolation and numerical differentiation, Ch. 4,
4. Numerical integration, Ch. 5,
5. Numerical solution of systems of linear equations, Ch. 7,
6. Approximation by spline functions, Ch. 9,
7. Smoothing of data and least squares, Ch. 12.

PREREQUISITE: MA 213 and CS 221 or equivalent. A knowledge of some high level programming language such as FORTRAN or C is required.

HOMEWORK: Homeworks assigned during classes for problems in the book will not be collected nor evaluated. Students will gain valuable knowledge and deeper understanding of what they learned in class by practicing these homeworks. Homeworks assigned in sheets will be collected within 1 week, will consist of theoretical problems or computer projects. Altogether there will be 5 or 6 collected homework assignments. **Late submissions will not be accepted. Homework assignments are to be worked out independently.**

EXAMINATIONS: Two mini-exams during the semester (February 21, Wednesday; and April 2, Monday) and a comprehensive final exam. In case of legitimate reasons (see *Student Rights and Responsibilities*), students must inform the instructor in advance to schedule an exam that will take place before the exam for the whole class. Make-up exams after that will only be given in cases of unforeseen (legitimate) reasons.

CHEATING: Students have to do the work by themselves. They can help each other with general concepts; however, direct assistance with a particular solution will be considered as cheating. Please refer to *Student Rights and Responsibilities* for more details concerning cheating; let me only remind that the minimum penalty for cheating is an E-grade.

GRADE COMPOSITION: Homework 20%, Two exams (25% each) 50%, Final 30%

FINAL GRADE: Assigned according to the following scale

A=90–100%, B=80–89%, C=70–79%, D=60–69%, E=0–59%