

THE UNIVERSITY OF KENTUCKY
Department of Mathematics
MA/CS 321 Introduction to Numerical Methods
Section 1 - Spring 2006
TR 11:00-12:15 in CB 205

Instructor: Dr. Qiang Ye
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Office Hours: TR 2:00-3:30 pm

Class Home Page: <http://www.ms.uky.edu/~qye/ma321>

Text: W. Cheney & D. Kincaid, Numerical Mathematics and Computing (5th Edition), Brooks/Cole Publishing Company.

Prerequisites: MA 213 and CS 221 or equivalent. Knowledge of a procedural computer language (C/C++, Pascal, Fortran, or Java) is required.

Outline:

- Introduction and Review of Taylor Series (Ch. 1)
- Number Representation and Errors (Ch. 2)
- Roots of Equations (Ch. 3)
- Interpolation and Numerical Differentiation (Ch. 4)
- Numerical Integration (5.2-5.3)
- Systems of Linear Equations (Appendix D, 7.1, 7.2, 8.1)
- Approximation by Spline Functions (9.1, 9.2)

Homework and Exams: There will be weekly homework that is to be handed in for grading, except in the weeks when there is mid-term exams or programming project.

In addition to the homework, there will be around four programming projects. For the programming languages, you can use C/C++, Pascal, Fortran, or Java. The projects will contribute 20% towards your grade in the course.

There will be quizzes of 15 minute duration held periodically in class. The date and coverage will be announced in class. The quizzes will be graded and contribute 15% towards your grade in the course.

There will be two mid-term exams to be held in class. They are tentatively set on 2/16/06 and 3/28/06. If you have time conflicts on those dates, please inform me immediately. There will also be a final exam of two hour duration.

For the exams, you are allowed to bring in one sheet of prepared notes. A nonprogrammable calculator is also needed for exams.

Grading: Homework: 20%,
Projects (4): 20%,
Mid-term Exams (2): 35%,
Final: 25%.

The following is a tentative scale for grading, subject to minor adjustments.

Grade	Minimum %
A	90
B	80
C	70
D	60

Interactive Exercises: On the class web page, there will become available interactive exercises that demonstrate how several numerical methods work. The programming exercises are written in Octave (an intuitive language) and you should run these programs by modifying various parameters. They should help you understand the theory that we cover in class.

Absence and Late Submission Policy:

- If you miss an exam, you will automatically be given zero mark unless reasons are provided with evidence (e.g. a note from a medical doctor), in which case the final mark will be adjusted.
- Projects and homework that are handed in late will have their marks reduced by 20% if it is one day late and 40% if it is three days late. No late project or homework will be accepted if it is more than three days late, unless reasons are provided with evidence.