

CSE 541: Elementary Numerical Methods
Spring, 2008

Instructor: Steve Lai Office: 581 Dreese Labs
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Course Summary: Survey of basic numerical methods; number systems and errors of finite representation, solution of a single non-linear equation, interpolation, numerical integration, and solution of linear systems.

Prerequisite: CIS 221 or CIS 230 and Math 153.

Text (required): *Numerical Mathematics and Computing, Fifth or Sixth Edition* by Cheney and Kincaid.

Calculator: A pocket calculator is required for in-class exercises and exams.

Sequence of Topics:

1. Taylor series, Chapter 1;
2. Computer arithmetic; rounding errors, machine precision, machine representation, Chapter 2;
3. Root finding, Chapter 3;
4. Polynomial interpolation, Chapter 4;
5. Differentiation, Chapter 4;
6. Integration, Chapters 5 & 6;
7. Systems of linear equations, Chapters 7 & 8;
8. Monte Carlo Integration, Chapter 13;
9. Smoothing of data and least squares method, Chapter 12;

Grading: Homework & Labs 30%, First Exam 35%, Second Exam 35%.

Exams:

1. First Exam: Monday, April 28
2. Second Exam: Wednesday, May 28

Policies:

- Late homework will NOT receive credit.
- All coding for all labs is to be done individually. You may discuss a lab with other students but DO NOT LOOK AT OR COPY anyone else's code.