CSE 541 — Elementary Numerical Methods  
Spring, 2011

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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.


CSE 541 COURSE NOTES (required): Available at the OSU bookstore.

CARMEN: https://carmen.osu.edu

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: HW & Labs 25%, Midterm 30%, Final 45% (or midterm 15% and final 60% if final score is greater than midterm.)

Students are expected to attend class regularly. In the event that a student must miss a class, the student is responsible for finding out what assignments were made, what due dates were announced, and what material was covered. 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.