

MTHSC 860 - Introduction to Scientific Computing

Professor: Daniel D. Warner

Class Room: M-203

Office: O-203

Class Hours 9:45-11:15 MTWThF

Office Hours: 11:30 - 12:00 MTWThF and by appointment

Course Objectives

1. To acquire facility in using the computer as a tool for solving mathematical problems.
2. To develop understanding and familiarity with some state-of-the-art mathematical software for solving certain elementary but fundamental problems.
3. To gain insight into the pitfalls caused by approximating real arithmetic with a finite set of floating-point numbers.

Policies

1. Attendance is not mandatory, but you will be responsible for all material covered in class. Roll will be taken until I know all the students.
2. The grade will be based on a mid-term exam and five programming projects. The grade for the course will be based solely on the exam and the five projects, all of which will carry the same weight. Each project will be graded on:
 - 40% - Design and Analysis (Are the answers correct? If so, how accurate are they?)
 - 30% - Completeness (Did it work?)
 - 20% - Local Structure and Readability
 - 10% - OutputThe grade on projects turned in late will be depreciated at the rate of 95% per day. (Note $0.95^3 < 0.86$) No projects will be accepted after the scheduled final exam period.

Textbook (recommended but not required)

Numerical Analysis by Kincaid and Cheney.

References

Computer Methods for Mathematical Computations by Forsythe, Malcolm, and Moler.

Numerical Mathematics and Computing by Cheney and Kincaid .

Numerical Methods by Dahlquist and Bjork.

Elements of Numerical Analysis by Henrici.

Numerical Methods for Scientists and Engineers by Hamming.

Introduction to Numerical Analysis by Stoer and Bulirsch.

Introduction to Scientific Computing by Charles F. Van Loan.

Mastering MatLab by Duane Hanselman and Bruce Littlefield.