Instructor

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Course URL: http://www.cse.psu.edu/~barlow/cse456


Prerequisites: CSE/Math 455

Honors option: Will be supported.

Course Syllabus:

- **January 17.** Introduction to the course. Go over this handout.

- **January 19–26.** Ordinary Differential Equations– Boundary Value Problems, Sections 8.7–8.8, 8.12. Some review of boundary value problems material from last semester.

- **January 29–February 9.** Orthogonal Transformations and Least Squares Problems. Section 5.3 and supplementary material.

- **February 12–March 3.** Eigenvalue and Singular Value Problems. Sections 5.1, 5.2, 5.4, 5.5.

- **March 5–9,19–24.** Iterative Methods for Large Systems of Equations, Sections 4.6–4.7.
• **March 10–18.** Spring Break. Enjoy.

• **March 26–April 6.** Linear Programming. Sections 10.3–10.4

• **April 9–20.** Intro to Optimization. Chapter 11–topics selected as time permits.

• **April 23–29.** Special topics as time permits, related to other subjects of this course from sections in the book not listed above.

• **April 30–May 4.** Presentations of Final Projects.

• **May 7–11.** There will be no final exam for this course.

**Grades**

The grades will be based upon quizzes over each major section, and a final project. Problems will be assigned to prepare for quizzes, but will not be graded. The grades will be portioned as follows.

- 50% Quizzes (about 4–each about 30 minutes)
- 50% Final Project

**Policy on Final Project**

For the final project you will partitioned into teams of two students, you can choose a partner or I will choose one for you. If we have an odd number of people, one teams may consist of three people. Your team is expected to work on its own (as in CSE Department guidelines).

Your project will consist in implementing a reasonably sofisticated numerical method in MATLAB, C, C++, or FORTRAN (I strongly recommend MATLAB). Your project should include sufficient internal and external documentation so that an educated user can use your project without your help. As the semester progresses, I will give you details about what is expected in this project.

I will need to see a proposal on your final project, the topic will be chosen by you in negotiation with me, no later than April 2. The proposal will be part of your grade. I strongly recommend that you come talk to me about your project.

The full project is due April 29, no extensions, no exceptions, please! You will also have to prepare a presentation to be given to the class, participation in the presentation of others is also part of your grade.