APPM 3050 **Scientific Computing in MatLab** **Spring 2009**

Instructor: Adam Norris, ECOT 212, (303) 492–7566, adam@colorado.edu

Lectures: MWF in ECCR 151 and/or ECCR 143. Sec. 001 from 8:00–8:50 AM, Sec. 002 from 9:00–9:50 AM

Course Objective: To learn basic techniques in numerical analysis and scientific computation using the MatLab software package. This is an introductory course in numerical analysis and programming, so the material will be presented from a problem-oriented perspective rather than simply a theoretical perspective (although some theoretical work will be covered). It is expected that you know the material in the calculus sequence through differential equations, and have a basic functional background in programming constructs, logic, and flow control. We may cover new material from other areas of applied mathematics as necessary.

Text: "Introduction to Matlab 7 for Engineers", by Palm, William J., McGraw Hill, 2005

Important Dates:

Jan 12 — Classes begin (Monday)
Jan 19 — No class, MLK Day (Monday)
Feb 25 — Drop/Add deadline without petition to the Dean
Mar 23–27 — Spring break
May 1 — Last day of classes (Friday)
May 6 — Final exam for Sec. 001 (4:30 – 7:00 pm)
May 4 — Final exam for Sec. 002 (7:30 – 10:00 pm)

Grading Distribution: 60% homework and project (2) assignments, 20% exam 1, 20% exam 2.

Homework Policy: Homework will be assigned on a somewhat regular basis. The problems may be from the text, but they may also require you to fill in details from class discussions, or further explore a topic outside of class. Problems assigned during any given week will be due the following Wednesday.

Your solutions should include the following:

- Clear, brief restatement of the problem or question.
- Neat, detailed, step–by–step solution including sufficient comments to make the solution "read" well.
- Statement of important assumptions.
- Statement of the significant physics of the problem. What does the answer mean? Is it reasonable? If you don't know, say so, but don't bluff.

When grading MatLab code, we will be looking at the following criteria:

- Does the program do what was asked?
- Is the program well structured, with logical flow?
- Is the program well documented, so that it is obvious to the reader what it does and how? (Note that good commenting is not the same as excessive commenting!)
- Is the program efficient? Does it do the job in the quickest and "cleanest" way possible?
- Is it extensible?

When grading analytic work, we will be looking at the following criteria:

- Correctness.
- Neatness. Submitted work must be a final copy, not a work in progress. Homework that is messy or unstapled will not be graded. The 10-second rule applies here, as well as all other work in this course.

You are encouraged to work together on assignments, however, the major portion should be done on your own. In all cases your submission should demonstrate that *you* understand the problem and its solution.

Academic honesty: Work on projects, homework, programming assignments etc., is generally done on an individual basis. I realize that students frequently help each other over hurdles while developing programs and solving problems, and I encourage this. However, using another person's work or allowing another student to use your work, will be considered a dishonest act. Violation of the CU Student Honor Code (*http://www.colorado.edu/academics/honorcode*) or the College of Engineering's Academic Honesty Advising Guidelines (*http://www.colorado.edu/engineering/ar_ugradadvising.html*) will result in a final course grade of F and a report to the College of Engineering or Arts and Sciences, a copy of which will be placed in the student's permanent file.

University Policies: Additional university policies can be found at the following site:
(*http://www.colorado.edu/policies*).