Syllabus

Term: Winter Quarter 2009
University Course Number: MEE 210B (cross-listed CS/ECE/MATH/ChemE/Geol)
Course Title: Numerical Simulation
Professor:

- Linda R. Petzold, Mechanical Engineering, and Computer Science
- Phone: (805) 893-5362
- FAX: (805) 893-5435
- Email: petzold@engineering.ucsb.edu
- Office: 5107 Harold Frank Hall
- Office hours: Mondays 11am-noon, Fridays 1-2pm, or email for appointment

TA:

- Kevin Sanft, Computer Science
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- Office: 5106 Harold Frank Hall
- Office hours: Tuesdays and Wednesdays 1-2pm, or email for appointment

Class Web Site: All assignments and announcements will be posted on the class web site, including office hour or class cancellations beyond what is listed below, and any other changes to the regular schedule. You are responsible for looking there to find any news. The site is http://www.engineering.ucsb.edu/~cse

Course Days/Times Meet on Campus: Monday and Wednesday 9-10:50
Office hour cancellations: Professor Petzold will be out of town: January 22-23, February 5-6, March 12-13


Course Description:


Expected Outcomes:

1. Understanding of fundamental concepts of numerical solution of ODEs, including sources and propagation of error, and stiffness
2. Experience with practical issues of software development including error control and stepsize selection
3. Capability of applying stability and accuracy concepts from numerical ODEs to numerical PDEs

Grading Policy:

- Exams 30%
- Classroom participation 30%
- Homework 40%

Course Schedule:

- Monday, January 19 - UCSB holiday
- Monday, January 26 - Exam 1
Monday, February 16 - UCSB holiday

Wednesday, February 18 - Exam 2

Wednesday, March 11 - Exam 3

Exams: Exams will be in-class, closed-book, no calculators, 60 minutes long. Bring paper to write on, and a stapler or fastener. Label all sheets of paper with your name. You are allowed and encouraged to bring one standard sheet of notebook paper with notes written on it (it is OK to write on both sides).

Homeworks: Homeworks are due at 9am (beginning of class). Hand them in directly to the TA. If you need to turn in a homework early, you can turn it in to the homework box (the box labelled CS211B, in Harold Frank Hall room 2108), by 8:30am on the day it is due. Late homeworks will not be accepted, because we will discuss the homework solutions in class on the day they are due. There will be programming homeworks, starting in week 2. Programming assignments should be done in Matlab. You are not allowed to use Matlab functions which would defeat the point of the exercise. (For example, if the exercise is to write an ODE solver, do not call one of Matlab’s ODE solvers unless the exercise explicitly says to do it, or unless you are doing it to compare with and check the accuracy of the ODE solver you have just written. If you are in doubt about whether you can use one of Matlab’s functions, ask me or the TA).

Classroom participation: At the beginning of each class period, we will review the most important concepts from the previous lecture. We will be doing this by randomly drawing names. If your name is drawn, you should select a concept from the previous lecture or assigned reading that you felt was important, go up to the board and briefly review it for the class. You can use the text or any other information that you happen to have available. I may also select concepts for you to review if I think they are important and nobody has selected them, and/or I may give you a problem to work on the board, with the help of the class. For class periods where a homework was due, we will go over the homework problems in a similar manner. If you do a reasonably good job, you will get a +; if you are absent or if it is obvious that you don’t know what you are talking about, then you will get a -; if you do an absolutely great job, you will get a ++. Your grade for classroom
participation will be given by the average of these scores (since we cannot ensure that everyone gets an equal number of opportunities). There may also be other opportunities for classroom participation. If, after a few weeks have passed, you believe that you are being called on much more or much less than average, talk to the TA about it and if we agree, we will attempt to bias the distribution. The purposes of classroom participation are to ensure that you are up to date on your reading and understanding of the course material so that you are able to get the most out of each lecture, to help you to prepare for oral exam situations, and to provide me with information about your level of understanding, so that I can adjust my lectures accordingly. If you consistently attend class and stay up to date on the reading material (after each class, read over the text sections that we covered, and think about what are the most important concepts, and read the other assigned material on a timely basis), you should be able to get an A in classroom participation.

Feedback: You are encouraged to ask questions during the lecture if there is anything you don’t understand. However, this will not count as classroom participation. You are welcomed and encouraged to send questions, comments or suggestions about the course to me or to the TA. You can do this by email or, if you prefer to do it anonymously, by putting it on paper, in the homework box.