Math 850, Fall 2014

Course: Numerical Analysis I
Instructor: Prof. Di Liu
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Office: D217 WH
Office Hours: MWF:11:30am-noon, and by appointment.

Class Webpage: Homework assignments and supplemental materials will be given here.
http://www.math.msu.edu/~richardl/teaching/math850

Course Description: The course will cover numerical methods for solving linear equations and eigenvalue problems. Emphasis will be on the designing and analysis of efficient and stable schemes, as well as implementation issues in the context of applications.

Prerequisites: Programming skill with Matlab is necessary. The students are expected to have taken courses in Linear Algebra at the undergraduate level. Prior knowledge on Numerical Methods is also required.

Textbooks: Our primary textbook for lectures and homework assignment will be


Certain chapters of the following books will also be used in class.


Grading policy: 30% on homework; 45% on midterms and 25% final project.

Homework: Homeworks will be assigned on a weekly basis, except if there is an exam or a Holiday. There will be approximately 10 homework assignments in total. Each homework set will consist of a couple of problems regarding proofs and code implementation. When collected,

- the numerical results must be illustrated with Tables and Figures in the format indicated in the problems. You can generate figures using Matlab or GnuPlot. A free GNU software called Octave provides computational environment compatible with matlab. Details can be found at http://www.gnu.org/software/octave/

- the code must be submitted together with the homework. In a Unix environment, the following command produces a readable print of a program in a two-column landscape format: enscript -G2r filename

Midterm exams: There will be three midterm exams scheduled tentatively on 09/29, 10/27 and 11/24.
Midterm and Final Projects: A midterm project and a final project will be given to make sure that things can be put together and will be due on 11/10 and 12/11. The projects is preferred to be prepared with Latex, which is a must skill for mathematicians. Here is a helpful link: http://www-h.eng.cam.ac.uk/help/tpl/textprocessing

Schedule: We will try to follow the following weekly schedule which is still subject to change.

W1 : Introduction
W2-5 : Solving linear equations
W6-8 : Linear least square problems
W9-10 : Eigenvalue problems
W11-13 : Iterative methods
W14 : Other topics

Important dates for Fall 2014:
Wednesday - 08/27/2014 - Classes Begin. Students should go to scheduled Monday classes on the first day.
Monday - 09/01/2014 - Labor Day - University closed.
Wednesday - 09/03/2014 - Online open add period for fall semester ends at 8pm.
Thursday 09/04/2014 to Wednesday 09/10/2014 - Students go to Undergraduate office, C212 Wells Hall for Mathematics enrollment changes. (Late adds, drop to lower course, section changes)
Monday - 09/22/2014 - End of 100% Tuition Refund
Wednesday - 10/15/2014 - Middle of Semester. Last day to drop a course without a grade being reported.
Thursday 11/27/2014 to Friday 11/28/2014 - Thanksgiving Break
Friday - 12/5/2014 - Last day of classes.

The University’s policy concerning academic integrity is covered in the Spartan Life booklet, General Student Regulations. According to the handbook, "No student shall claim or submit the work of another as one's own."