MATH 709 (Foundations of Computational Mathematics II), Spring 2015

Meeting Information

Classroom Location: LC 303B

Days and Times: TTH 11:40AM–12:55PM

Instructor Information

Xinfeng Liu

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Office Location: LC 317Q

Office Hours: TTH 1:00PM–2:30PM or by prior appointment

Course Homepage:
people.math.sc.edu/xfliu/teaching/Spring2015/math709/math709.htm

Textbook

Numerical Linear Algebra, 3rd Edition, by Lloyd N. Trefethen and David Bau.

Prerequisites

Math 554 or equivalent upper level undergraduate course in real analysis.

Subject Materials

This course will tentatively cover the topics that include: vectors and matrices; QR factorization; conditioning and stability; solving systems of equations; eigenvalue/eigenvector problems; Krylov subspace iterative methods; singular value decomposition. One of the basic objecives of this course is to acquaint students of science and engineering with capabilities of using computers for solving numerical linear algebra problems that arise in their professions. Another objective is to provide students an opportunity to hone their skills in computer programming and problem solving.

Homework

Homework will be assigned, and will be collected regularly (generally on Thursdays). Late homework will not be accepted, and no make-ups for missing homework. Details about this will be given as appropriate. One lowest homework will be dropped for the final grade calculation.

Exams

There will be two midterm exams and a comprehensive final exam. The exams are "closed book": no books, no notes, no calculators, no labtop computer or equivalent technology, etc. There are no early exams. A late exam is only possible for a written legitimate documented reason. Note that student athletes, participating in a USC athletic event and with appropriate

documentation, are exempt from this rule. You must take your exams with the lecture for which you are registered.

Grades

Homework (25%) (one lowest homework will be dropped)
Exam 1 (20%), Thursday, Feb. 12, 2015
Exam 2 (20%), Thursday, March 19, 2015
Final (35%), Monday, May 4, 2015

The deadline to drop this course without a grade of WF is **Thursday, March 5, 2015**. The dates and materials for two mid-term exams are tentative and subject to change as announced in class.

Reading

Reading the reference textbooks **in advance** of the lecture is strongly encouraged. Benefits of this preparation include obtaining a familiarity with the terminology and concepts that will be encountered (so you can distinguish major points from side issues), being able to formulate questions about the parts of the presentation that you do not understand, and having a chance to review the skills and techniques that will be needed to apply the new concepts.

Learning Outcome

Students are expected to master mathematical algorithms for matrix computation along with programming skills, and apply numerical algorithms that they learn from this course to solve a great variety of problems arising from physical/engineering sciences. In addition, the students are also expected to be prepared to evaluate and judge the accuracy of the numerical results with computer algorithms.

Attendance

Attendance at every class meeting is important - and expected. Students missing more than 10% of the class meetings (4 days) can have their grade lowered.

Cell Phone and Computer Policy

Please remember to turn off or silence your cell phone prior to class. No texting allowed during class. Computers can only be used to make notes during class, and playing computer games during class is not tolerated.

Academic Dishonesty

Cheating and plagiarism in any form is not tolerated. If a student is caught cheating, I will follow the guidelines as set forth in the USC Honor Code and other University guidelines.