COURSE ANNOUNCEMENT

Numerical Analysis I

MATH 701

Fall Semester 2009
MW 2:30–3:45
AB 634

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Math 701 is the first course in a year long sequence dedicated to studying Numerical Analysis at the graduate level. In this sequence we consider a variety of techniques that solve various problems appearing in applications. We plan to analyze the suitability of various methods for the solution of the three main classes of problems that represent the subject of the numerical analysis:

- Linear Systems
- Approximation
- Differential Equations

Throughout the course we conduct theoretical analysis of traditional methods that are used for the solution. At the same time students would conduct a number of programming exercises that illustrate suitability or not suitability of methods often used in problem solving.

Also, we may consider the subject of optimality of algorithms. Although in the recent years there was a tremendous progress in the power of computers, it is still important to have efficient algorithms. One way to address this issue is to utilize known properties of the solutions of modeled equations.

Consideration of many topics of numerical analysis require a lot of auxiliary information from different areas of analysis, differential equations, linear algebra, etc. Such information will be compactly presented during the course as needed.

Grade in the course will be based on exams and homework assignments that would include theoretical and computational problems. The main computing language will be MATLAB due to the large number of in-built subroutines with various algorithms.

Main Text: D. Kincaid and W. Cheney, *Numerical Analysis: Mathematics of Scientific Computing,* 3rd edition, BrooksCole, 2002,
but certain topics will be presented based on other books.