APPM 5600: Numerical Analysis 1 Course Syllabus Fall 2017

Webpage: `http://tinyurl.com/y8m25jk3`

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> *Lecture:* ECCR 150, MWF at 9 a.m.
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Text: An introduction to numerical analysis, Second Edition, by Kendall E Atkinson.

Course Description: Computation has become one of the three legs of science and engineering: Theory, Experiment, and Computation. No discipline has escaped the influence of computation and many disciplines have been reinvented because of new computational capabilities. A single CPU can perform over 10^{12} double-precision floating-point operations per second. Good mathematical algorithms are essential to effectively harness this power. This class is the first step in understanding the mathematics of computation. Broadly, the topics covered include:

- Solution of linear systems of equations: Direct & Iterative Methods

- Rootfinding for nonlinear systems of equations

- Interpolation

- Approximation

- Numerical Integration

Emphasis is laid on the analysis of algorithms rather than their efficient implementation, but the course also relies heavily on actual computations for the purposes of illustration and the development of insight. This course is the first of a two-semester sequence preparing students for the APPM preliminary exam in Numerical Analysis. The matrix eigenvalue problem, and numerical methods for ordinary and partial differential equations are covered in the second semester, APPM 5610.

Exams: There will be two midterm exams and a comprehensive final. The midterms will be administered in class; dates TBD.

Homework: Doing and understanding the homework is very important in this class. There will be weekly homework assignments due on Wednesdays; solutions will be posted to D2L (learn.colorado.edu). Late homeworks will not be accepted. See the course webpage for the list of homework problems and due dates. The lowest homework grade will be dropped.

Grade determination: Your course grade will be a weighted average of your homework, exam, and project scores. The weighting is as follows:

- Homeworks – 15%
- Exam #1 – 20%
- Exam #2 – 20%
- Final exam – 45%

The instructor reserves the right to modify grade distribution for various reasons, for example, if a student has not worked with sufficient independence.

University policies: See `http://www.colorado.edu/amath/academics/student-resources/policies` for the relevant university and department policies.