Math 5511: Introduction to Numerical Analysis II

Spring 2015

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Lectures: TT 2:00-3:15 PM in MSB 211.

Office hours: TT 3:15-4:45 PM or by appointment.

Class web page: `http://www.math.uconn.edu/~connors/math5511s15/index.html`
Note: the class web page will serve as a means to disseminate homework and other information during the semester.

Textbook: *Introduction to Numerical Analysis* by J. Stoer and R. Bulirsch.

This course essentially covers Chapters 5-7 in the text with possibly some additional topics at the end of the course (see topics), if time/weather permit.
Topics:

- Iterative methods to find roots or minimum points
- Matrix reductions
- Computing eigenvectors and eigenvalues (and singular values)
- Numerical methods for ODEs
- Numerical methods for boundary value problems
- Difference methods
- Variational methods
- Finite volume methods (time permitting)
- Numerical methods related to stochastic equations (time permitting)

Grading:

- Homework (best 2 out of 3): 70%
- Midterm exam (75 minutes): 10%
- Final exam (75 minutes): 20%

Exams are closed-book. Homework will include both theoretical and computational components. Late homework will be penalized at a rate of 10% PER WEEK that it is late. The classical grade scale will be used for the course grade; $A : 90 - 100\%$, $B : 80 - 89\%$, etc.

Computing:
We will use MATLAB for computations. It is available in the graduate computer lab, on office computers, or the student version may be purchased for about $100 at mathworks.com or through the UConn Co-op. Plenty of help getting started is available online. In addition, some sample code may be provided on the class website.