MATH 5520
Finite Element Methods I
Spring 2011
Syllabus

Instructor
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MSB 332

Venue and Time
MSB 411, TuTh 2:00-3:15 pm.

Office hours
Tuesday 3:15-4:15 pm or by appointment

Prerequisites
This course is appropriate for graduate students majoring in mathematics as well as mathematically inclined graduate engineering students. I will try to make the course self contained. Familiarity with basic analysis, ordinary and partial differential equations, and basic knowledge of MATLAB is required. The course will cover the following topics:

- Two-point boundary value problem
- Elliptic problems.
- Finite Difference and Finite Element methods for elliptic equations.
- Parabolic problems.
- Finite Difference and Finite Element methods for parabolic equations.
- Hyperbolic problems.
- Finite Difference and Finite Element methods for hyperbolic equations.

Textbook
Partial Differential Equations with Numerical Methods, by Stig Larsson and Vidar Thomee

Grading policy
- Homework 70%
- Final Project 30%

Homework
There will be weekly homework assignments. There will be problems which require analysis while other problems will require Matlab code. Collaboration with classmates is encouraged. However, everyone must write and turn in their homework solutions separately.