MTH 452: Section 001/MTH 552: Section 001
Numerical Solution of Ordinary Differential Equations
Winter 2007

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Office Hours: MW: 11:00-11:50 am and by appt.

Class Time: MWF: 10:00-10:50 am
Classroom: COVL 218
Website: http://www.math.oregonstate.edu/~bokilv/MTH452-552.html


Course Description. In this course we will review basic information about differential equations and their solution. We will study difference methods for initial value problems (IVP’s) including one-step and multi-step methods, explicit and implicit methods. We will study properties of numerical methods for IVP’s; namely their stability, consistence, convergence, cost, accuracy and efficiency. Students will learn to solve ODE’s using numerical simulations in order to study their properties.

Additional topics may include introductory material on boundary value problems (BVP’s) solved with shooting methods and finite differences.

Prerequisites: A good background in differential equations is required (students registered for MTH 452 should have taken 256 or equivalent). Familiarity with (some) numerical methods, algorithms, some programming language, and in particular with MATLAB is a plus; however, I will develop the basics as necessary. Most students will have taken 451/551 prior to this course but this is not mandatory. Students who are not sure about satisfying these prerequisites are encouraged to talk to me.

MATLAB: The programming language for this course is MATLAB. If you have not used MATLAB before try working through tutorials available on the web. Introductory material on MATLAB will be available on my website.
Course Grading:

1. Homework Assignments: (40%). The lowest homework score will be dropped. If your homework is late you will receive up to half credit for the first two days after the due date. Homework submitted three days or later after the due date will not receive any credit.

2. Midterm: Feb 12, 2007, in class (25%)

3. Final: Mar 22, 2007 at 12:00pm. (35%)

If you do not perform well on your midterm, you may make up for it in the final: If your final is better than your midterm, the midterm will be discarded and the final score will count 60%. If the final is not better than the midterm, it will count 35% and the midterm 25%.

Check the class website (given above) for general information and other policies regarding the class.