Course Syllabus Spring Semester 2010
MAT 5663.001 Ordinary Diff. Eqns. II 5:30-6:45 pm HSS 3.04.06

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MY SPRING 2010 TEACHING SCHEDULE:
MAT 5293.001 MW 4:00-5:15 pm MS 2.01.06 Numerical Linear Algebra
MAT 5663.001 MW 5:30-6:45 pm HSS 3.04.06 Ordinary Differential Equations II
MAT 6603.001 MW 7:00-8:15 pm MS 2.02.52 Optimization Techniques/Operations Research

Textbook: Ordinary Differential Equations, V. I. Arnold, Springer, ISBN 3-540-34563-9. Lectures and problem assignments will follow the textbook closely, so it is necessary to have access to a copy.

GRADING: Beginning graduate students should review the pages in the Graduate Catalog relating to grades. Problem sets assigned on a (roughly) weekly basis will determine 45% of your grade, an in-class midterm exam 25%, and a final exam 30%. At my discretion, there may be a final assignment instead of an in-class final exam; it will consist of your reading through a survey article in the field and making a written/oral presentation. Note that class will meet during the final exam period regardless. This is a graduate course and I reserve the right to make minor modifications to the grading scheme to reflect how the class as a whole progresses with the material.

COURSE DESCRIPTION:
5653 Differential Equations I (3-0) 3 hours credit. Prerequisites: MAT 3613 and MAT 4213, or consent of instructor. Solution of initial-value problems, linear systems with constant coefficients, exponentials of operators, canonical forms and generic properties of operators, and contractions. 5663 Differential Equations II (3-0) 3 hours credit. Prerequisite: MAT 5653. Dynamic systems, the fundamental existence and uniqueness theorem, stability, the Poincare-Bendixson theorem, introduction to perturbation and bifurcation theory.

COURSE OBJECTIVES: The course is designed to enable a student to attain mastery of the theory and applications of ordinary differential equations. Note the prerequisites for ODE I: one semester of undergraduate differential equations and Real Analysis I. Not everyone took the first semester of graduate ODE; but in any case you should have had the two undergraduate prerequisites for MAT 5653. In the first semester, we covered much of the material in Arnold’s book, but this spring we will revisit several topics in more depth, as well as cover new material. This should provide a thorough background for those master’s students wishing to take a comprehensive exam in the area of ordinary differential equations.

DATES TO REMEMBER:
January 11 - First Day of Classes
January 27 - CENSUS DATE
February 10 – In-class midterm exam
February 19 – Midterm Grades due
March 15-19 – Spring break
March 22 – Last Day to drop
May 3, Monday, 5:00-7:30pm - Final Exam