Goals for this Course

- Understand the basic concepts of differential equations.
- Be proficient at solving the following types of differential equations.
  - single linear first order
  - linear second order equation with constant coefficients, including solution via the Laplace transform
  - first order systems with constant coefficients
- Be able to analyze and interpret differential equation models of physical systems.

Course Structure

This course meets three times a week for lectures, where the basic concepts will be introduced. There are also two conference sections per week, led by a TA or PLA.

- Homework
  The homework assignments will be given in class and listed on the course web page. Completing these exercises is essential to your mastery of the material. Some of the assignments will be problems from the text and some will make use of the on-line WeBWorK server. Homework from the text will be collected in conference and selected problems will be graded. Late homework will not be accepted without prior arrangement with the instructor. Homework scores will count as 25% of your final grade.

Homework papers handed in in conference must include your name on the first page. Homework papers must be stapled. Answers without supporting work will not be graded.

About WeBWorK
WeBWorK is a web-based collection of programs for on-line submission of homework. It was developed at the University of Rochester. WeBWorK provides immediate feedback to students and gives them the opportunity to correct mistakes during the process. A demonstration will be given in class before the first assignment that uses WeBWorK.

- **Exam**
  There will be three hour exams during the term. Each will count 25% of your final grade. Tentative dates are September 12, October 1, and October 15.

**Material to be covered**

The section numbers are from the text.

- **Week 1** Basics for a single, first order equation  
  Secs. 2.1, 2.2, 2.4

- **Week 2** Theory and Applications for a single, first order equation  
  Secs. 2.5, 2.7, 2.9, 3.1

- **Week 3** Second order equations  
  Secs. 4.1, 4.3

- **Week 4** Undetermined coefficients, applications  
  Secs. 4.4, 4.5, 4.7

- **Week 5** Systems of differential equations  
  Secs. 8.1, 8.2, 9.1

- **Week 6** More on systems, Laplace transforms  
  Secs. 9.2, 5.1, 5.2

- **Week 7** More on Laplace transforms  
  Secs. 5.3, 5.4