Course Goals

The main goal of this course is to provide students with an understanding of both the theory and the applications of calculus. Applications will be emphasized over theory, however, especially applications to biology, management, and the social sciences. Students will also gain experience in working in teams on the laboratories that are an important part of this course.

About this course

- **Laboratories.**
  We will meet in the lab on Tuesday where you will work in pairs on lab exercises designed to help you explore the calculus concepts we are struggling with. Short written reports will be required; there will be 6 labs during the term, totaling 12% of your final grade.

  Lab reports will be due the same day the lab is introduced. Attendance at the lab sessions is required. No excuses will be accepted without prior arrangement with me. Labs will go up on the web on the Monday before the lab period.

- **Examinations.**
  There will be three hour exams. Each hour exam will count for 25% of your final grade. Together, these exams will count for 75% of your final grade.

  Tentative dates for the exams are January 25, February 8, and February 28. All exams will be during our normal class time. Make-ups for missed exams will not be given without prior arrangement with me.

- **Homework.**
  Homework problems will be assigned weekly to give you practice with basic manipulation. Doing these problems regularly is essential to your understanding of the material. Most of the assignments will be problems from the text, but a least two will make use of the on-line WeBWorK server. Homework from the text will be collected on Friday in the conference sections and selected problems will be graded. Homework scores will count as 13% of your final grade. Late homework will not be accepted without prior arrangement with me.

  Homework papers must include your name on the first page. Homework papers must be stapled. Each problem must include the steps you used to get to your answer as well as a brief explanation of your logic. Answers without supporting work will not be graded.
About WeBWorK
WeBWorK is a web-based collection of programs for online 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.

Topics to be covered this term.

Week 1 Integration by substitution, numerical integration, improper integrals, probability
   Secs. 6.2, 7.3, 7.4, 7.5

Week 2 Functions of several variables, partial derivatives, optimization
   Secs. 8.1, 8.2, 8.3

Week 3 More on optimization, least squares
   Secs. 8.3, 8.4

Week 4 Double integrals and applications
   Secs. 8.7, 8.8

Week 5 First order differential equations, population growth, economic modeling
   Class notes

Week 6 Linearity, systems of differential equations
   Class notes

Week 7 Applications of systems of differential equations
   Class notes