Math 312 **Applied Mathematics: Social Sciences** **Spring 2006**

Course Information

Instructor: Warren Weckesser **Office:** 314 McGregory
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Office Hours: Wednesday and Thursday, 9:00–10:30 AM
Other times by appointment.

Text: None. I will hand out notes and other references in class.

Web Page: http://math.colgate.edu/∼wweckesser/math312/

Overview:

Love and marriage. Battles and wars. Drugs and disease. Fun and games. These are *not* the typical subjects that most people think of when asked "How is mathematics used in the real world?" In this course, we will see how mathematics can be used to study all these topics and more.

This is a course on *mathematical modeling*. Actually, it is a bit narrower than that. It is a course on modeling a selected class of problems. These are *dynamic* problems; problems in which *time* (either continuous or discrete) is the independent variable. Applications will be drawn largely from the social and biological sciences (although a few examples from the physical sciences will be used).

Prerequisites:

Math 113 - Calculus III
Math 214 - Linear Algebra

Homework:

There will be 8–10 homework assignments. They will be challenging, and will require significant effort. Some of the problems will require you to go beyond what has been covered in class, and apply the techniques that you have learned to new problems. You should expect to get stuck now and then, and you may need some help from me or from your classmates.

Collaboration with your classmates on the homework is allowed, and even encouraged. *Collaboration* means working together so that each of you understands the problems and can solve them on your own; it does not mean simply copying someone else's answer. You must write your own solutions in your own words.

Project:

You will do a project on a mathematical modeling problem that you choose, subject to my approval. Additional details will be provided later.

Exams:

There will be two take-home midterm exams and a self-scheduled final exam. The dates of the midterm exams will be announced later.

Grading:

Your grade will be based on the following:

Homework	20%
Project	5%
Midterm Exam 1	25%
Midterm Exam 2	25%
Final Exam	25%