

## MATH 331 COURSE INFORMATION

**Prerequisite** Completion of Math 231 or permission of instructor.

**Required Text** NONLINEAR DYNAMICS AND CHAOS (SECOND EDITION), by S. Strogatz

**Course Content** Selected sections in Chapters 1-11 of the textbook.

**Course Objective** We will learn some of the fundamentals of analyzing and solving nonlinear ordinary differential equations. In particular, the student who successfully completes the class will know:

1. elementary bifurcation theory for flows on the line
2. elementary bifurcation theory for flows on the plane
3. stability analysis, and its role in bifurcation theory
4. how to analyze solutions to ODEs without having an explicit expression for the solution
5. how to derive and analyze mathematical models for systems in biology, physics, and engineering.

**Homework Policy** Problems will be assigned regularly. I encourage you to collaborate with each other when doing the homework problems; however, each person must hand in the solutions in his/her own writing and words. One of the goals in doing the homework is to not only further develop your problem-solving skills, but to improve your ability to communicate mathematics. I must receive a hard copy of the assignment at the **beginning** of the class period in which it is due. I will not accept an electronic copy, and I will not accept late assignments. If you will not be in class the day the homework is due because of a prearranged conflict, it is your responsibility to get the assignment handed in to me **before** you leave.

**Make-up Policy** There will be **no** make-ups.

**Grading Policy** The homework will be graded weekly. There will be a midterm and a final exam. The points will be distributed as follows:

	Homework	Midterm	Final Exam	Total
Points	200	100	100	400

The distribution of grades is not determined until the end of the semester. In a typical situation, the final distribution of grades will determine the cutoff point for A's, B's, etc. I can guarantee, however, that if your class average is 93 or better, then you will receive an A for the course.

**Attendance Policy** Your attendance is not mandatory; however, your likelihood of doing well is directly proportional to the number of lectures that you attend. If you decide not to attend, that is your business, but please do not then expect me to be sympathetic to your pleas for help the day before an exam is given.

**Electronic Gadget Policy** While you are free to use the technology of your choice while doing the homework problems, *you will not be permitted to use any technology when taking an exam.*

The classroom is a **No Cell Phone Zone**. You are not to use your cell phone to make phone calls, receive phone calls, or text message. Any violation of this policy will result in the deduction of three points from your **final** class average.