Introduction to Dynamical Systems
Math 498, Spring 2010
10:00-10:50 MTWTh, Hertz 118 (Bouillon 103 on W)

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Text: A First Course in Chaotic Dynamical Systems, by Robert Devaney.

Course Description: Dynamical systems is an exciting field of contemporary mathematics that is having an increasing influence upon the sciences and mathematics education. A student planning on going into industry, teaching, or planning on attending graduate school, will undoubtedly want to learn more about this field in their future endeavors. This course is designed to introduce students to the foundational mathematical concepts of discrete dynamical systems.

Course Goals: Upon successful completion of the course, the student will be proficient in answering questions of both a computational and theoretical nature within the following topics:

- Iteration
- Bifurcation
- Symbolic dynamics
- Topological conjugacy
- Chaos

If time permits, we will also consider topics such as fractals, Julia Sets, and the Mandelbrot Set.

Course Policies:

Class Participation: Daily classes will be a mixture of lecture, computer experiments, and group discussion. Each student is expected to make meaningful contributions. This can take the form of presenting a proof, discussing observations of computer experiments, or participating in class discussions. There should be plenty of time to share your thoughts, understandings, and questions.

Homework/computer experiments: Problems from each section will be assigned and selected problems will be turned in for grading. You are encouraged to work together on homework but each student must turn in his or her own write-up. Students will also perform selected computer experiments and write up observations for grading.

Exams: There will be two in-class exams.

Course Grade: Course grades will be assigned according to the following distribution:

Homework/Lab work	40%
Class participation	10%
Two in-class exams	50%

General: This course is a rigorous mathematics course where students are required to understand all of the definitions, theorems, proofs and so forth. You will often be asked to explain mathematical concepts in essay questions on exams, to prove certain facts, and to write concisely and accurately about the mathematical ideas in the course.

Students with special needs or disabilities that may affect their ability to access information or material presented in this course are encouraged to contact the Director of Disability Support Services at 963-2171 (TTD 963-2143).