

22M:014, First Year Seminar
Spring 2007

Lecturer: Juan A. Gatica
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Office Hours: Tuesdays 10:30-11:20AM.

Personal communication is preferred over electronic mail.

Required Textbook:

Chaos, An Introduction to Dynamical Systems by Kathleen T. Alligood, Tim D. Sauer and James A. Yorke, Springer Verlag, 1996.

Objectives of the Seminar:

To get an understanding of discrete dynamical systems, the concept chaos and its consequences. The main objective of the course is to inspire students to study mathematics.

Grading:

Course grades will be based on class participation and an in class presentation on a subject that will be selected by collaboration between the student and the instructor.

Concerns:

Concerns about any aspect of the Seminar should be first addressed with the instructor. If there is no satisfactory resolution from the student's point of view, the concerns should be addressed to Prof. David Manderscheid, Chair of the Department of Mathematics, 14 MLH.

Technology:

Students will be given some training in MAPLE to be able to conduct computer experiments and graphing.

I would like to hear from anyone who has a disability which may require seating accommodations.

The Syllabus appears in the Lecturer's website (www.math.uiowa.edu/~gatica).

Approximate Syllabus:

Lecture	Date	Sections
1	01/16/07	Introduction:1.1
2	01/23/07	Cobwebbing:1.2
3	01/30/07	The concept of differentiation
4	02/06/07	Fixed points, stability:1.3
5	02/13/07	Introduction to Maple
6	02/20/07	Maple and discrete dynamical systems
7	02/27/07	Periodic points:1.4
8	03/06/07	The family of logistic maps:1.5
9	03/20/07	The logistic map $G(x) = 4x(1 - x)$:1.6
10	03/27/07	Sensitive dependence on initial conditions:1.7
11	04/03/07	More on $G(x) = 4x(1 - x)$:1.8
12	04/10/07	Chaos and Lyapunov exponents:3.1
13	04/17/07	Chaotic orbits:3.2
14	04/24/07	Student presentations
15	05/01/07	Student presentations