

MATH 557B

Spring 2016 Course Policy and Information

Last revised: January 13, 2016

Instructor: Kevin K. Lin

Course web page: <http://math.arizona.edu/~klin/557>

Office hours: see course web page

Prerequisites: A course in real analysis at the advanced undergraduate or first-year graduate level. Some experience with nonlinear dynamics, e.g., at the level of *Nonlinear Dynamics and Chaos* by Steven Strogatz, or Math 557A.

Topics to be covered: *Examples of chaotic dynamical systems; introduction to hyperbolic dynamics; basic ergodic theory; additional, special topics may include introductions to attractor reconstruction, Lyapunov exponents, transfer operators, fractal dimension, geometric singular perturbations, or others to be determined by your interests and mine.*

References:

- 1) M. Brin and G. Stuck, *Introduction to Dynamical Systems*, Cambridge
- 2) J. Guckenheimer and P. Holmes, *Nonlinear Oscillations, Dynamical Systems, and Bifurcations of Vector Fields*, Springer
- 3) E. Ott, *Chaos in Dynamical Systems*, Cambridge

I will be using the first two as our main references (but not always following them closely), supplementing them with handouts as we go along. The third reference is useful as a summary from a more physical point of view.

Attendance: You are expected to be familiar with the University Class Attendance policy as it appears in the General Catalog. If you miss a class, it is your responsibility to keep informed of any announcements, syllabus adjustments, or policy changes. *You must attend class during the first two weeks of the semester; you will be dropped from the course if you do not. If you need to miss class during the first two weeks but wish to stay in this section, contact me now.*

Grading: Your grade in the course will be based on the following:

- Written homework (30%)
- Class participation (30%)
- Project (40%)

Homework: I will assign a number of written homework assignments over the course of the semester. These are an integral part of the course, and you are expected to write up clear solutions and hand them in on or before the due date.

You are encouraged to collaborate on written homework assignments, but the write-up must be your own.

Project: Your course grade will be based in part on an independent project. The topic of the project will be decided together with the instructor. The grade for the project will be based on either a written or oral report; the exact format will be determined later in the semester.

Academic integrity: You are expected to behave in accordance with the Student Code of Conduct and the Code of Academic Integrity. University policies can be found at <http://deanofstudents.arizona.edu/policiesandcodes>.

Disabilities: If you anticipate issues related to the format or requirements of this course, please see me as soon as possible (**no later than Tuesday, 8/31**) to discuss ways to ensure your full participation in the course. If formal, disability-related accommodations are necessary, it is very important that you register with Disability Resources (621-3268; <http://drc.arizona.edu>). Accommodations will be made on a case-by-case basis.

Withdrawing: If you withdraw from the course by Feb. 9, the course will be deleted from your enrollment record. If you withdraw by March 29, you will receive a grade of *W*. The University allows withdraws after March 29 but only with the Dean's signature. Late withdraws will be dealt with on a case by case basis. Requests for late withdraw without a valid reason may or may not be honored.

Incompletes. The grade of *I* will be awarded if *ALL* of the following conditions are met:

- 1) You have completed all but a small portion of the required work.
- 2) You have scored at least 50% on the work completed.
- 3) You have a valid reason for not completing the course on time.
- 4) You agree to make up the material in a short period of time.
- 5) You ask for the incomplete before grades are due (which is 48 hours after the scheduled time for the final exam).

Policy changes. The instructor may adjust this course policy as needed. Such changes will be announced in class and posted on the course web page. It is your responsibility to be aware of these changes.