

3010 Applied Mathematics

Introduction to Nonlinear Dynamics and Chaos

Fall 2008

Where and when: MWF 12-12:50 pm, ECCR 116

Instructor: Anca Rădulescu, office ECOT 338

Office hours: M 10am-12pm, 9-10am or by appointment.

Text: Nonlinear Dynamics and Chaos, by S. Strogatz (Addison-Wesley, Reading)

Computers: A list of software for dynamics much of it free – is at
[http:// amath.colorado.edu/faculty/jdm/faq-\[5\].html](http://amath.colorado.edu/faculty/jdm/faq-[5].html)

I will use Maple and Matlab for classroom demonstrations.

Homework and class-participation: Homeworks will be assigned roughly weekly, and they will be due back same day on the next week. Each homework assignment must be your own work. However, I encourage you to discuss the problems and their solutions with your class-mates. 30% of the grade will reflect homework and in-class participation, consisting of discussions and short project presentations during the semester.

Midterm exams: There will be two midterm exams, each worth 20% of the final grade. Each midterm will have an in-class portion, and a take-home component. See the schedule for the corresponding dates and times.

Final project: There will be no final written exam. Instead, the final exam will be taken under the form of a 20 minute presentation, during the last week of classes and the winter exams period. This will need some scheduling, so a list of possible topics will be handed out to you by the end of the third week; you may choose from the list or bring in your own ideas (subject to approval). To keep some track of your work, I will require a 2-4 page project proposal by October 13-th. The final presentations will be in December (see schedule). The format of the project is open: analytic problem, computer program, historical study, pick what interests and excites you the most. The project will be due in written form the last day of class, and will be worth 30% of the course grade.

This course operates under the *Academic Honor Code*. Your work on this project must be in your own words. It does not need to be original research, and can be a review of the work of other people, with proper citations and more detailed explanations and proofs of things that were left out in the original papers.

The overall course grade will be a weighted average of all of the above:

1. In-class participation and homework 30 %
2. Midterms 40 %
3. Final project 30 %

Disabilities: If you qualify for accommodations because of a disability, please submit to me a letter from DS early in the semester, so that your needs may be addressed. DS determines accommodations based on documented disabilities (303-492-8761, Willard 332).

Other custom arrangements: If you have religious holidays or obligations that would make it impossible for you to hand in an assignment in time, please let me know, so that arrangements can be made for a delayed due date.