

MAT452. Intro to Chaos and Nonlinear Dynamics, SLN 74668
Syllabus, Fall 2009

Texts:

S.H. Strogatz [1994], “Nonlinear Dynamics and Chaos with Applications to Physics, Chemistry, and Engineering,” Addison-Wesley.

J. Guckenheimer and P.J. Holmes [1983], “Nonlinear Oscillators, Dynamical Systems, and Bifurcations of Vector Fields,” Springer-Verlag (7th printing 2002).

Instructor: Wenbo Tang

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Meeting Schedule: TTh 10:30AM-11:45AM, ECGG 315

Office hours: TTh 12:30PM-2:30PM (subject to change) and by appointment, at PSA 837

Contents and prerequisites:

Properties of nonlinear dynamical systems; dependence on initial conditions; strange attractors; period doubling; bifurcations; Smale-Birkhoff theorem; and applications in biology, physics, engineering, etc.

Prior exposure to ODEs and Linear Algebra is important, although no particular course number is specified.

Homework assignments and grading:

Weekly homework assignments are given every Thursday and are, unless otherwise specified, due the following Tuesday before class. Collaboration for homework by teams of size at most three is encouraged but not required. Each team can submit one copy of your homework but all members must sign. Please make sure that you have understood all contents submitted and expect in-class presentation of your solutions. Homework & class participation weigh 40% in your final grade.

An open-note, closed-book mid-term exam weighs 20% of the grade.

Forming in groups of three (appointed by the instructor), you are assigned final projects 3-4 weeks into the semester. Final presentation is on the last day of classes. This counts towards 40% of the final grade.

ACADEMIC DISHONESTY!

In the “Student Academic Integrity Policy” manual, ASU defines “‘Plagiarism’ [as] using another’s words, ideas, materials or work without properly acknowledging and documenting the source. Students are responsible for knowing the rules governing the use of another’s work or materials and for acknowledging and documenting the source appropriately.” You can find this definition at:

http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm#definitions

Academic dishonesty, including inappropriate collaboration, will not be tolerated. There are severe sanctions for cheating, plagiarizing and any other form of dishonesty.