

MATH 465

Text: Nonlinear Dynamics & Chaos by Steven H. Strogatz

COURSE OUTLINE:

The topics covered in the course will include:

1. Nonlinear models arising in Biology, Mechanics and other Earth Sciences
2. Steady states, bifurcation and oscillations
3. Discrete dynamics; mappings and difference equations
4. Multi-dimensional flows and linear systems
5. Local and global stability
6. Phase portraits, stability and limit cycles
7. Dissipative systems, reversible systems
8. Poincare maps, Hopf bifurcations and higher bifurcations
9. One dimensional maps and Lyapunov exponents
10. Chaotic oscillations, strange attractors and fractals
11. Periodic mapping systems

See “Course Syllabus” for Lecture time, room and other information.

GRADING POLICY

2 Midterm Exams--40% of grade
Homework --30%, Final--30%