

Reference book: Strogatz

Prerequisites: Linear Algebra, Ordinary Differential Equations, Dynamical Systems, Ability to solve systems of ODEs on matlab (via ode45 or similar function), Experience using pplane.m on matlab.

Due date for homework/quizzes will be discussed in class. I just put it on to show what to expect.

Lectures organized in one hour periods and subject to change and reorganization. At least one experiment and field trip will be held. Other experiments will be conducted if time and resources are available.

Grade breakdown:

Homework/Quizzes/Attendance: 30% (10% each)

Take-home Midterm: 25%

Final Project: 45%

Unofficial office hours: Wednesday (2:30 - 4).

Lecture	Topics	Relevant Sections
1	Linear Algebra Review and ODE Review	Notes
2	Dynamical Systems Review	2.2, 2.4, 2.7, 4.1, 6.1, 6.3, 6.5
3	What is "Chaos" and Non-chaotic systems	Notes, 7.3
4	Maps	10.1, 10.2, 10.3, 10.4, 10.5
5	Poincare Maps and Structural Stability	8.7
6	Chaotic Scattering	Notes
7	Mid semester review	Notes
8	Double Pendulum	Notes
9	Lorenz Equation and Strange Attractors	9.2, 9.3 9.4,9.5, 9.6, 12.1
10	Chemical Chaos	12.4
11	FractalsChua Circuit	11.1, 11.2, 11.3, 11.4, 11.5
12	Chua Circuit	Notes
13	Guest lecture by Professor Casey Diekman	Notes
14	Neuronal Networks	Field Trip