

Math 106 : Syllabus and general information

September 27-09

Instructor: Maria Schonbek

Office: Baskin Engineering 353A phone: 459-4657

Office Hours : T.10:30-12 Th. 4-5:30

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Lectures : T-Th:2:00-3:45 Nat Sci Anex 103

Textbook : **Differential Equations, Dynamical systems** Authors: **M. Hirsh, S. Smale, R. Devaney** .

Grading: Homework: 15%, Midterm I: 40 %, Final 45% .

This Syllabus gives a general idea of the progress of the class. There will be variations depending on how fast certain topics are understood .

Midterm I date: Nov 5

Final: Take Home

Enrollment: For problems with and questions about enrollment please contact (mathadvising@ucsc.edu)

We will cover the following topics:

1. Week 1: Review of simple first order equations, Poincare maps, Planar systems: Chapter 1+2.
2. Week 2: Linear Systems in 2D+ Phase portraits : Chapter 2 and 3 .
3. Week 3: Trace determinant plane. Dynamical classification. Higher dimension linear algebra: Chapter 4+5.

4. Week 4: Higher dimension linear algebra Jordan canonical form. Chapter 5. +6
5. Week 5: Higher dimensional systems. Harmonic oscillators. Chapter +6.
6. Week 6: Review and 1st midterm
- 7 Week 7: Exponential of a matrix . Non-autonomous Linear systems. Chapter 6
- 8 Week 8: Nonlinear systems. numerical methods. Chapter 7
9. Week 9: Equilibria in nonlinear systems Chapter 8
10. Week 10: Equilibria in nonlinear systems Chapter 8. Take home Final.