

Syllabus MAT351 Spring 2018

Place and time:

P116 Physics,
Tuesdays and Thursdays 11:30-12:50.

Instructor: Marco Martens

- Office: 4-113 in the Math Tower.
- email: marco@math.sunysb.edu
- Office Hours:
 - Tu 16:00-17:00
 - Wed 16:00-17:00
 - or
 - by appointment
 - or
 - just pass by and if I am available I will be happy to help you.

Textbook: *One-Dimensional Dynamics: From Poincare to Renormalization*. Lecture Notes provided by the Instructor.

Contents: Dynamics studies chaotic processes. Often these systems are described by differential equations. Unfortunately, especially when the system is chaotic, it is not possible to study these systems by solving the equations. Nevertheless one can study these chaotic systems from other points of view. To do so one needs tools.

These tools are sophisticated. Some are general, others are specially designed to study chaotic dynamics.

In this course we will study systems which the simplest behavior: the dynamics of circle diffeomorphisms. Many of the tools are already necessary to study this type of dynamics. And the advantage of circle diffeomorphisms is that all these tools can be used with only knowledge of calculus and linear algebra.

That sounds easy. But be aware that the tools are non trivial and involve many concepts beyond calculus and linear algebra. The course will discuss proofs of the Theorems.

Grades policy:

Weekly Home Work 20%

Midterm 30%

Final 50%

Homework: The home work will be collected each Tuesday in class.

Writing Requirements: successful completion of MAT 351 with a C or better satisfies the expository portion and the math portion of the upper-division writing requirement for the mathematics major.

Information for students with disabilities: If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748 or <http://studentaffairs.stonybrook.edu/dss/>. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: <http://www.sunysb.edu/ehs/fire/disabilities.shtml>