Instructor: Slobodan Simić
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Email: simic@math.sjsu.edu or slobodan.simic@sjsu.edu (best way to contact me)
Course web page: http://www.math.sjsu.edu/~simic/Fall13/Math134/134.html
Prerequisite: Math 133A (with a grade of “C−” or better in each) or instructor consent.
Office hours: In person: M 10:30-12:00, W 10:30-11:30 and 2:45-3:15, and by appointment. Online: almost any time on Piazza (see below).
Homework: There will be weekly homework assignments. You may collaborate with others in solving homework problems, but you must write up your solutions independently, without copying from notes taken in group work.
My late homework policy is: one class late – 50% penalty, two classes late – 75% penalty, three classes late – no credit.
Exams: There will be a midterm and a final exam, both take-home. You will have a week to complete each exam. There will be no make-up exams. Please mark your calendars:
Midterm: October 9–16, 2013
Final exam: December 9–16, 2013
Project: Each student will do a class project based on one of the Explorations in the textbook. See the class web site for more information.
Grading policy: Homework 20%, Midterm 20%, Project 20%, Final 40%
Course outline: Please see the course web site for a detailed course plan.
Course objectives: The student should be able to:
- Solve and sketch the phase portrait of a linear homogeneous system of differential equations in the plane.
- Define the notion of topological conjugacy.
- Classify planar linear homogeneous systems up to topological conjugacy.
- State the theorem on existence and uniqueness of solutions of ordinary differential equations and sketch its proof.
- Define the notion of an equilibrium of an autonomous dynamical system.
• Find equilibrium points of various simple planar nonlinear systems.
• Classify equilibria into sinks, sources and saddles, and centers.
• Define the notion of a stable/unstable manifold.
• Define the notion of stability and asymptotic stability of an equilibrium of a dynamical system.
• Investigate stability and asymptotic stability in various simple planar nonlinear systems.
• Define the notion of a closed orbit and that of a limit cycle.
• Define and analyze the Poincare map associated with a closed orbit.
• State the Poincare-Bendixson theorem.
• Apply the techniques learned in the course to analyze equations for modeling the 2-body problem in Newtonian mechanics.
• Define and analyze some fundamental examples of discrete dynamical systems such as the discrete logistic map and Smale’s horseshoe.
• Define and state the main properties of the shift map in symbolic dynamics.

**Participation:** During class please feel free to stop me at any time and ask questions. I encourage and greatly appreciate students’ participation. I will add up to five extra points for participation to your final grade.

**Feedback:** I appreciate constructive feedback which you can give me via the anonymous feedback form on the class web page, by email, or in person.

**Academic integrity:** From the Office of Student Conduct and Ethical Development: Your own commitment to learning, as evidenced by your enrollment at San José State University, and the University’s Academic Integrity Policy, require you to be honest in all your academic course work. Faculty are required to report all infractions to the Office of Student Conduct and Ethical Development. The policy on academic integrity can be found at [http://sa.sjsu.edu/student_conduct](http://sa.sjsu.edu/student_conduct).

**Campus policy in compliance with the Americans with Disabilities Act:** If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with your instructors as soon as possible, or see them during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability.

**Class attendance:** According to University policy F69-24, Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.

**Piazza:** For most out-of-class Q&A we will be using Piazza ([https://piazza.com](https://piazza.com)). Piazza is a free online gathering place where students can ask, answer, and explore 24/7, under the guidance of their instructors. On the class dashboard, students can post questions and collaborate Wikipedia-style to edit responses to these questions. I as an instructor can also answer questions, endorse student answers, and edit or delete any posted content. Each student will be invited to join Piazza by email. Please join it as soon as you can, as I plan to use Piazza extensively.

For more details, see the course web page.