Methods of Applied Mathematics 1 (MAP 5165)

Syllabus, Fall 2016


Professor: Richard Bertram
Office Hours: M, W, F 9:30–10:30 or by appointment
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Prerequisite: A course in linear algebra and a course in ordinary differential equations.

Text: The course lectures are based mostly on two books. One, by Steve Strogatz, emphasizes a geometrical viewpoint. The other, by Phil Drazin, has an algebraic viewpoint. The titles of the books are:

Nonlinear Dynamics and Chaos, by Steven H. Strogatz, 1994 or the second edition published in 2014


Course Theme: In this course we will discuss methods for analyzing linear and nonlinear dynamical systems. We’ll start with difference equations, then onto ordinary differential equations of one, two, and higher dimensions. By so doing we will examine structures such as equilibria, limit cycles, and chaos, as well as the various types of bifurcations that reflect qualitative changes in the system. Perturbation methods will be used, as well as geometric methods.

Expectations: You are expected to attend class and participate in discussions. If you miss a class you must get notes from another student. You are expected to complete all assignments and exams.

Assignments: Periodic homework assignments will be made. You will typically have between 1 and 2 weeks to complete an assignment, which must be turned in on time to avoid a 20% grade reduction for late work (late assignments accepted, with
Exams: There will be two exams. The midterm exam will be split into two class periods, since our classes are relatively short. I anticipate these to be held Oct. 5 and 7, though this could change. The final exam is scheduled at 10:00 AM until noon on Friday, Dec. 16 and it is cumulative, though the emphasis will be on material after the midterm. If you have a valid reason for missing the mid-term exam then your final exam grade will be used for the missed mid-term exam.

Grading: The sum of the assignments counts 50% of the final grade. The mid-term exam counts 20%, and the final exam counts 30%. The final letter grade is determined according to the following scale:

- 92.1–100% = A
- 90–92% = A–
- 86.1–89.9% = B+
- 82.1–86% = B
- 80–82% = B–
- 76.1–79.9% = C+
- 70.1–76% = C
- 68.1–70% = C–
- 60–68% = D
- 0–59.9% = F

Policy statements from the FSU bulletin:
University Attendance Policy: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy: The Florida State University Academic Honor Policy outlines the University’s expectations for the integrity of students’ academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to be honest and truthful and [to] strive for personal and institutional integrity at Florida State University. (Florida State University Academic Honor Policy, found at http://fsa.fsu.edu/Academics/Academic-Honor-Policy.)

Americans With Disabilities Act: Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.