

Instructor: William (Riley) Casper, Padelford C-111, wcasper@math.washington.edu

Office Hours: TBA and by appointment.

Course Webpage: http://www.math.washington.edu/~wcasper/math309_fall15.html

Tentative Course Outline:

Matrices and Systems of Linear Equations:

- Review of Linear Algebra (3 lectures)
- Homogeneous Linear Systems (5 lectures)
- Nonhomogeneous Linear Systems (2 lecture)

Nonlinear Differential Equations and Linear Stability Analysis:

- The Phase Plane (1 lecture)
- Stability of Autonomous Systems (1 lecture)
- Linear Stability Analysis (1 lecture)

Partial Differential Equations and Fourier Series:

- Separation of Variables (2 lectures)
- Fourier Series (6 lectures)
- The heat equation (2 lectures)
- The wave equation (2 lectures)
- Laplace's equation (2 lectures)

Textbook: *Linear Analysis* by Boyce 10th ed..

Prerequisites: Math 307, Math 308

Classroom Expectations: Students in this class have the following expectations:

1. attend class daily
2. preform required reading before class
3. review lecture slides before class

4. participate and ask questions in class
5. complete weekly homework assignments
6. take one midterm (Friday, October 30) and one final exam (Thursday, December 17)
7. participate in surprise quizzes

Class Website: Lecture slides for each class will be posted on the course website a few days prior to each lecture. Students are expected to have at least briefly reviewed these before class, in order to have a better idea of what to expect, and more easily contribute to classroom discussion. Solutions to homework, quizzes, and exams (when applicable) will also be viewable on the course website. Weekly reading assignments will also be available there.

How to Succeed: This class will introduce you to powerful tools to tackle problems in mathematics, physics, engineering, and other scientific disciplines in your future career. The wide applicability of these methods to problems in these diverse disciplines makes it well worth your time to gain a sense of mastery of the material at hand. The best way to achieve this is by working a great many problems – significantly more problems than will be assigned in the homework. The book is full of wonderful problems, and the internet and your instructor can provide you with even more.

Grade Evaluation: Your grade will be based on homework, the midterm, quiz scores, and the final exam.

- Homework: 15%
- Quizzes: 15%
- Midterm: 20%
- Final Exam: 50%

Homework: Students should expect weekly homework assignments. Late homework will not be accepted. Late homework will not be accepted. Late homework will not be accepted. (You've now been told three times).

Extra Help: Do not hesitate to come to my office during office hours or by appointment to discuss a homework problem or any aspect of the course. You also may want to consider getting help from the free tutors in the Math Study Center (MSC). Additionally, if you want to hire an outsider tutor (which costs money), you can find a list of such people through the UW math department.

Students with Disabilities: To request academic accommodations due to a disability, please contact Disabled Student Services: 448 Schmitz, 206-543-8924 (V/TTY). If you have a letter from DSS indicating that you have a disability which requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need in the class. Academic accommodations due to disability will not be made unless the student has a letter from DSS specifying the type and nature of accommodations needed