

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

Office Hours: Wednesday after class, Friday before class, and by appointment.

Course Webpage: http://www.math.washington.edu/~wcasper/math307_spr16.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, 308

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

1. attend class daily, participate and ask questions
2. preform required reading and review lecture slides

MATH 300 is also a plus.

3. complete weekly homework assignments
4. take two midterms and one final exam
5. participate in surprise quizzes

Midterm and Final Dates:

1. Midterm = May 4th in class
2. Final = June 8, 2016, 2:30-4:20 pm, SIG 225

Class Website: Lecture slides for some (but not all) classes will be posted on the course website. 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. Most of the time, solutions to homework, quizzes, and exams (when applicable) will also be viewable on the course website. Weekly reading assignments will also be available there.

About Quizzes: Quizzes, like brussel sprouts, are a necessary evil designed to make us all strong and healthy. The quizzes will typically cover material from one or two lectures before, but often before the same material has appeared in the homework. The point of this is to give me a gauge of what is in your brains while I am telling you new things, and to *inspire* you to have an active knowledge of the material in the class. This avoids the otherwise too-strong temptation to avoid learning anything new until the homework is due. The quizzes themselves will occur roughly once a week and will **not** be announced beforehand. The intention of this is to motivate ourselves to constantly have a good idea of what is going on in the class now, and to attend class and share in the discussion.

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