

Course Information

WVU catalog description: [Intermediate Differential Equations](#)

Textbook: Brauer and Nohel, [The Qualitative Theory of Ordinary Differential Equations: An Introduction](#), Dover 1989.

Course website: https://wiki.math.wvu.edu/mediawiki/index.php/564_Spring19 (also linked from my webpage)

Discussion board: We will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza:

<https://piazza.com/wvu/firstsemester2019/math564/home>

Instructor: Casian Pantea <http://math.wvu.edu/~cpantea/>

Class schedule: Mondays, Wednesdays, Fridays 2:30-3:20PM in Woodburn 116.

Office hours: Mondays 1:30-2:20PM, Wednesdays 3:30-4:20PM, in Armstrong Hall 305B

Prerequisites

Math 261; Strongly recommended: Math 343/441 and Math 283.

Course Description

Most of the material will be presented in a manner consistent with the presentations in the text. Students are expected to read and study the examples and related material in the text and to work on the assigned problems sets. Similar problems will be used as examples during lectures as preparation for the exams. The course begins with a discussion of real-life problems whose solutions are modeled by the use of Ordinary Differential Equations; we will also try to gain an appreciation of what is needed to solve these problems and begin to work on the foundation of the relevant theory. It continues with a selection of more advanced topics. Upon completion of this course, the student should be able to apply these notions and techniques to problem solving. For this, the student is expected to have thoroughly understood the theory linking the concepts.

Topics will include examples of differential equations/systems from Physics, linear systems, phase space analysis, existence theory, uniqueness for the initial value problem, stability of linear and almost linear systems, linearization and local stability, Lyapunov methods.

Evaluation

Grading scheme

- 30% Final exam
- 40% Two midterm exams
- 15% Quizzes
- 15% Homework assignments

- The following scheme will be used to assign letter grades:

A	90 – 100%
B	80 – 90%
C	70 – 80%
D	60 – 70%
F	0 – 60%

Quizzes

- There will be six 10-minutes quizzes (one every two weeks), out of which the best five will count towards your grade.
- Quizzes will test the material covered during the previous two weeks.
- No make-up quizzes will be given.

Homework

- Homework will be assigned once every two weeks, and due two weeks later (please see the course schedule below for exact dates).
- Your best five homeworks will count towards the final grade.
- Late turn-ins will not be accepted.

Midterms

- There will be two 50-minutes in-class midterm exams, on February 20 and April 1.
- Midterm exams will test material covered after the previous midterm (they are not cumulative).
- No make-up midterm will be given.

Final Exam

- Monday April 29 2019, 11AM–1PM in Armstrong 313.
- Final is cumulative (i.e. all material covered during the semester will be tested).

Doing well in this class

The material in this course is rich and non-trivial, and requires a certain degree of mathematical maturity on your part. As is often the case in math courses, we will constantly build upon previous stuff; therefore, not leaving gaps in your understanding of the material is crucial for succeeding. This will require a sustained effort on your part, and in addition to attending lectures, you are encouraged to take advantage of instructor's office hours. Of course, this is not a substitute for also working on your own; it is essential to think about the material, read the suggested texts, and solve homework problems by yourself or in collaboration with fellow students. This is necessary to being able to solve problems under the pressure of a quiz or an exam.

Accessibility Needs

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Services (304-293-6700).