

## Differential Equations I

Math 3410.001, Spring 2025, TR 12:30-1:50, Wooton 117

**Professor:** Conley, GAB 419, conley@unt.edu

**Website:** [www.math.unt.edu/~conley](http://www.math.unt.edu/~conley). Please note that there will be no Canvas page for this course; homework and announcements will be posted at the course page on my faculty website.

**Office Hours:** Tuesdays and Thursdays, 2:00-4:00

**Text:** *Elementary Differential Equations and Boundary Value Problems*, by Boyce and DiPrima. Any edition will be satisfactory.

**Prerequisites:** Calculus II (1720) with a grade of C or higher is required. Linear Algebra (2700) is recommended, but may be taken concurrently.

**Exams:** There will be two 100 point midterms and a comprehensive 200 point final: see over for dates. There will be no make-up exams.

**Homework:** Practice problems will be posted weekly. They will not be collected, but the quiz problems will be drawn from them. Solutions will not be posted, but you are encouraged to ask about them in class and office hours.

**Weekly Quizzes:** There will be 13 quizzes, worth 10 points each. They will be given at the end of each Thursday class, exam weeks excepted. There will be no make-up quizzes, but your lowest three quiz scores will be dropped.

**Grading:** There are a total of 500 points possible. The letter grade point cut-offs vary from year to year, but are usually around 80% for an *A*, 60% for a *B*, 50% for a *C*, and 40% for a *D*. After each exam I will let you know the cut-offs for the exam, and after Exam 2 I will also give you the cut-offs for the total number of points possible up to that point.

### Policies:

- Attendance is required. You have 3 free absences. Further unexcused absences may cost 5 points each.
- Phone/laptop use is not permitted in lecture. Visible/audible devices may cost 2 points.
- Exams & quizzes are pen/pencil/paper only. Use of other materials may incur a penalty of up to a zero on the exam/quiz.

**Disabled Students:** Please let me know of your disability.

**Book Chapters:** 1. Introduction, direction fields

2. First order equations: linear equations, integrating factors, separable equations, exactness
3. Linear second order equations: homogeneous with constant coefficients, homogeneous, the Wronskian, complex roots, repeated roots, reduction of order, inhomogeneous with constant coefficients, undetermined coefficients, variation of parameters
5. Series solutions, ordinary points, regular singular points, Euler equations
6. The Laplace transform, initial value problems, step functions
7. First order homogeneous linear systems with constant coefficients,  $2 \times 2$  matrices, eigenvectors, direction fields, trajectories

**Quiz 1:** Practice problems: 1, 2.

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MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1/13	1/14 First lecture	1/15	1/16 Quiz 1	1/17
1/20 MLK Day	1/21	1/22	1/23 Quiz 2	1/24
1/27	1/28	1/29	1/30 Quiz 3	1/31
2/3	2/4	2/5	2/6 Quiz 4	2/7
2/10	2/11	2/12	2/13 Quiz 5	2/14
2/17	2/18 EXAM 1	2/19	2/20	2/21
2/24	2/25	2/26	2/27 Quiz 6	2/28
3/3	3/4	3/5	3/6 Quiz 7	3/7
3/10 Spring Break	3/11	3/12	3/13	3/14
3/17	3/18	3/19	3/20 Quiz 8	3/21
3/24	3/25	3/26	3/27 Quiz 9	3/28
3/31	4/1 EXAM 2	4/2	4/3	4/4
4/7	4/8	4/9	4/10 Quiz 10	4/11
4/14	4/15	4/16	4/17 Quiz 11	4/18
4/21	4/22	4/23	4/24 Quiz 12	4/25
4/28	4/29	4/30	5/1 Quiz 13	5/2 Reading Day
5/5	5/6	5/7	5/8 Final Exam: 10-12	5/9