MATH 2410Q-014 Spring 2026
Differential Equations
Syllabus

General Information:

Time: Monday, Wednesday, and Friday 9:05am-9:55am

Location: MONT 421

Instructor: Heidi Benham

Email: heidi.benham@uconn.edu

Office: MONT 126

Office Hours:

Monday 11:00am-12:00pm, Thursday 12:30pm-1:30pm, Friday 11:00am-12:00pm, or by appointment

Course Description:

Official Description: Qualitative, analytical and numerical methods for first- and second-order single ordinary equations as well as first-order constant coefficient linear systems and some special nonlinear systems. The Laplace transform and its application to differential equations.

Prerequisites: 1132Q, 1152Q, or 2142Q. Recommended preparation: A grade of C- or better in MATH 1132Q; MATH 2110Q or 2130Q. Cannot be taken after MATH 2144Q, 2420Q, 2720, 3146, 3150, 3410, 3412, 3510, 3170. Repeat restrictions apply; see advising.uconn.edu/repeat-policy.

Textbook:

The textbook for this course is "A First Course in Differential Equations with Modeling Applications" by Dennis G. Zill (12th edition).

You may use the ebook or a physical book. This class does not require access to WebAssign. You are welcome to use older editions of the book or another book entirely, as long as it covers the same material (see content in course schedule) but I do recommend having a book for reference and studying. If you would like to purchase a cheaper used copy, I recommend visiting the following sites:

- Thrift Books
- AbeBooks
- Ebay

Homework:

You will be assigned biweekly homework for a total of 7 homework assignments. You will submit the assignments via GradeScope. Please hand-write your homework (electronic handwriting is fine). Do not submit your homework typed up unless you are using a program specifically designed for typing math (such as LaTeX). If you submit an assignment that is typed in a word processor (such as Microsoft Word) you will receive a 0. Make sure to do the homework on a separate piece of paper from what the homework problems are written on. All homework assignments are due at 11:59pm the Sunday after an even-numbered week, with the exception of Homework 4, which is due 11:59pm on the Monday of week 9. See Course schedule for exact dates.

Quizzes:

We will have 10 quizzes during this class about what we have learned during the week. We will have a quiz every Friday except on weeks 8, 12, 13, and 14. The quizzes will be 10 minutes long each and will occur at the end of the lecture. You may have up to 2 excused quizzes for the whole semester, in case you are unable to make it to class. Additionally, there will be optional retry/make-up/bonus quizzes on each Friday of the last three weeks of class. Besides this, there will not be other opportunities to make up quizzes.

Activities:

You will be assigned biweekly activities to be done outside of class. They are intended to prepare you for upcoming content. The nature of the activities will vary, so make sure to read the instructions each time. All activities are due at 11:59pm the Sunday after an odd-numbered week. See Course Schedule for exact dates. Activities will be submitted via GradeScope.

Presentations:

Each student will be presenting one homework problem in class. You will be given 5-7 minutes to do so. You will sign up for a presentation time during the first week of class. If you are unable to make it to class on the day of your scheduled presentation, please let me know so we can reschedule. If you do not present, you will receive a 0 on this assignment.

Exams:

This class has two exams: one midterm exam and one final exam. The midterm will be given on **Friday March 13th** during class. The date and time of the final exam will be given later on in the semester.

Grading:

The grade breakdown is as follows:

Homework: 25% ($\sim$ 3.6% each)

Quizzes: 15% (1.5% each)

Activities: 15% ($\sim$ 2.1% each)

Presentation: 10%

Midterm: 15%

Final: 20%

Course Schedule:

Below is a schedule that shows what topics we will learn each week as well as important due dates. Note that this schedule is tentative and is subject to change. There will be a calendar on HuskyCT that will update as go through the lectures.

Week	Dates	Topics	Due Dates
1	1/20 - 1/25	Definitions and Terminology (1.1) Initial Value Problems (1.2)	**Activity 1 due 1/25**
2	1/26 - 2/1	DE's as Mathematical Models (1.3) Solution Curves without a Solution (2.1) Separable Equations (2.2)	**Homework 1 due 2/1**
3	2/2 - 2/8	Linear Equations (2.3) Exact Equations (2.4)	**Activity 2 due 2/8**
4	2/9 - 2/15	Solutions by Substitutions (2.5) A Numerical Method (2.6)	**Homework 2 due 2/15**
5	2/16 - 2/22	Preliminary Theory— Linear Equations (4.1) Reduction of Order (4.2) Homogeneous Linear Equations with Constant Coefficients (4.3)	**Activity 3 due 2/22**
6	2/23 - 3/1	Undetermined Coefficients (4.4-4.5) Variation of Parameters (4.6)	**Homework 3 due 3/1**
7	3/2 - 3/8	Review of Power Series (6.1) Solutions About Ordinary Points (6.2)	**Activity 4 due 3/8**
8	3/9 - 3/14	Midterm Exam Review	**Midterm 3/13**
	3/15 - 3/22	Spring Break	No Class

Week	Dates	Topics	Due Dates
9	3/23 - 3/29	Definition of Laplace Transform (7.1) Inverse Transforms and Transforms of Derivatives (7.2)	**Homework 4 due 3/23 (Monday)** **Activity 5 due 3/29**
10	3/30 - 4/5	Operational Properties I (7.3) Operational Properties II (7.4)	**Homework 5 due 4/5**
11	4/6 - 4/12	Preliminary Theory— Linear Systems (8.1) Homogeneous Linear Systems (8.2)	**Activity 6 due 4/12**
12	4/13 - 4/19	Special Topics	**Homework 6 due 4/19**
13	4/20 - 4/26	Special Topics	**Activity 7 due 4/26**
14	4/27 - 5/3	Final Exam Review	**Homework 7 due 5/3**
	5/4 - 5/9	Finals Week	

Late Policy:

In general, work that is submitted after its due date will not be accepted. Please reach out if you experience any extenuating circumstances.

Expectations and Tips for Success:

- Since this is an in-person class, you are expected to attend each lecture. If you need to miss a lecture, it is your responsibility to make sure you learn the content you missed. I will update the calendar regularly so that you can see what sections you missed. Read the sections and come to office hours if you have questions.
- You should be reading the material outside class. I recommend reading the section we are planning to cover before class. That way you will be prepared.
- Make sure that you come to office hours if you want help with anything.

University Policies:

- **Policy Against Discrimination, Harassment, and Related Interpersonal Violence:** The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the

maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate amorous relationships can undermine the University's mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate amorous relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. Additionally, to protect the campus community, all non-confidential University employees (including faculty) are required to report sexual assaults, intimate partner violence, and/or stalking involving a student that they witness or are told about to the Office of Institutional Equity (OIE). Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. An exception to this reporting exists if students disclose information as a part of coursework submitted to an instructor in connection with a course assignment. Even in the absence of such obligation, all Employees are encouraged to contact OIE if they become aware of information that suggests a safety risk to the University community or any member thereof. The University takes all reports with the utmost seriousness. More information, including resources and reporting options, is available at `https://equity.uconn.edu` and `https://titleix.uconn.edu`.

- **Student Conduct Code:** Students are expected to conduct themselves in accordance with UConn's Student Conduct Code.

- **Academic Integrity:** This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. Because questions of intellectual property are important to the field of this course, we will discuss academic honesty as a topic and not just a policy. If you have questions about academic integrity or intellectual property, you should consult with your instructor. Additionally, consult UConn's guidelines for academic integrity.

- **Students with Disabilities:** The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020, or `https://csd.uconn.edu`.