**Math 2410Q-003**
Elementary Differential Equations
Spring 2026

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

## Course Information

**Course Title:** Elementary Differential Equations
**Credits:** 3
**Prerequisites:** MATH 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, 3710. Repeat restrictions apply; see advising.uconn.edu/repeat-policy.
**Class Meetings:** TuTh 8:00 – 9:15am, Mont 112

## Instructor Information

**Professor:** Nicole Massarelli, PhD (You can call me Nicole or Professor Massarelli)
**Pronouns:** (she/her/hers)
**Email:** nicole.massarelli@uconn.edu
**Office:** Mont 303
**Office Hours/Availability:** Tuesday/Thursday 10-12pm, or by appointment

You are welcome to stop by to ask questions or discuss course material without an appointment during these times. If you are unavailable during these times (or they are too busy), feel free to reach out to me and we can schedule an appointment to meet at another time. Be sure to include what class and section you are in when emailing.

## Welcome!

Welcome to Math 2410Q! This is one of my favorite classes to teach and I am excited to work with you this semester. You can expect to learn about differential equations but also how to learn math concepts and practice study skills. I hope that these are skills you will take with you as you continue your education. I am committed to creating a welcoming environment and encourage you all to actively participate during lectures and take advantage of the time to practice in class.

The best way to be successful in this course is to attend class regularly and consistently practice the methods we learn in class. Online homework is just one way to practice! I strongly encourage you to work on extra problems from the eBook- the odd answers are included in the back! These generally start off on the easier side and then ramp up so this is a good way to build your confidence. The repetition will help you prepare for quizzes and exams. There are also a ton of great resources online like Paul's Online Notes and YouTube channels like the Organic Chemistry Tutor (great math resource!). Feel free to reach out to me at any point if you feel like you are struggling or need more resources or support for a particular topic!

## Course Materials

**You must purchase a WebAssign access code to complete the homework for this course.**

The textbook for this course is A First Course in Differential Equations with Modeling Applications by Dennis G. Zill, 12th edition that comes bundles with a WebAssign access code. This eBook is a fantastic resource! Not only are there additional practice problems and answers to the odd exercises as in a usual textbook, but there are also video links to explanations and worked examples that can be used to supplement your notes. Be sure to check it out!

## Course Description

We will cover qualitative, analytical and numerical methods for first- and second-order single ordinary equations as well as first-order constant coefficient linear systems and special nonlinear systems. The Laplace Transform and its application to differential equations will also be covered. We also look at using differential equations as models. Some models we will explore include Newton's Law of Cooling, Series Circuits, and exponential and logistic growth.

## Course Objectives

The goal for this semester is to learn what first- and second-order ordinary differential equations are and a variety of methods for finding solutions. You should also be able to describe solutions qualitatively using direction fields and phase portraits. You will learn a variety of methods for solving certain types of equations analytically, including separation of variables, variation of parameters, undetermined coefficients, and the Laplace Transform. We will also explore using differential equations as models and analyze solutions for systems of equations.

## Course Requirements and Grading

| Category | Overview | Weighting |
|---|---|---|
| Online HW | Due weekly on WebAssign | 15% |
| Worksheets | Some days we will complete worksheets in class which will be graded on completion. You must be present in class to receive credit. | 5% |
| Quizzes | Weekly quizzes on Thursdays except for exam weeks. Quizzes will cover the material from the previous week. | 15% |
| Midterm Exams | 2 exams will be given during the semester. | 20% each |
| Final Exam | Cumulative Final Exam will be given during Final Exam Week | 25% |

## Online Homework

Homework will be completed online via WebAssign, which you should access via our course in HuskyCT. There is an assignment for almost every section of the textbook that we cover, and assignments will be due on Wednesdays at 11:59 PM. The material covered in Week 1 will be

due on Wednesday of Week 2, and so on. It is important to start your homework as soon as possible to receive help and get questions answered if needed. You will get 5 attempts to answer each question. After each attempt, you will be told whether or not your answer is correct. You can request an automatic 2-day extension on WebAssign up to 7 days after the original due date, with a **15% penalty**. The last day to complete any graded work is the last day of class.

### Quizzes

There will be a weekly quiz on Thursdays except for weeks when we have an exam. Quizzes will consist of a few problems related to the material covered during the previous week. If you must miss a quiz, please contact me **before the scheduled quiz time**. The quiz must be completed **by the following Wednesday**. If you do not meet these requirements, you will receive a 0 for the quiz.

### Worksheets

We will also do worksheets to either review and practice key ideas or to work with new concepts and applications. These problems will hopefully serve as a great resource to practice your understanding of the techniques and variety of problems, so make sure to do them and ask questions as they arise so that you don't fall behind and get overwhelmed. The worksheets will be graded for completion. You must be present in class to complete the worksheets. To account for missed classes due to illness or other reasons, you only need to earn 12 worksheet points throughout the entire semester. No make-up worksheets will be given.

### Exams

There will be two midterm exams as indicated on the course schedule and a cumulative final exam that will include the Chapter 8 material. The Final Exam date and time is TBD and will be decided by the registrar's office. You are expected to be available during finals week.
If you need to reschedule an exam for any reason, please talk to me instructor immediately. If you need to reschedule the Final Exam, this must first be approved by the Dean of Students office; I am unable to reschedule without their approval.

The Final Exam will consist of three parts, one for each of the midterm exams and one for the new material covered after Exam 2. If you score higher on the corresponding section of the final exam than you did on your midterm exam, I will average the two scores. Thus, if you show improvement in your understanding of the material, you can improve your midterm exam scores.

For additional information on undergraduate grading policies see here:
https://registrar.uconn.edu/grades/

### Grading Scale:

| Grade/ Points Earn | Letter Grade | GPA |
|---|---|---|
| 93-100 | A | 4.0 |
| 90-92.9 | A- | 3.7 |
| 87-89.9 | B+ | 3.3 |
| 83-86.9 | B | 3.0 |

| | | |
|---|---|---|
| 80-82.9 | B- | 2.7 |
| 77-79.9 | C+ | 2.3 |
| 73-76.9 | C | 2.0 |
| 70-72.9 | C- | 1.7 |
| 67-69.9 | D+ | 1.3 |
| 63-66.9 | D | 1.0 |
| 60-62.9 | D- | 0.7 |
| <60 | F | 0.0 |

### Due Dates and Late Policy

Homework is due weekly on Wednesdays. All homework due dates will be published on each assignment. Online homework will be accepted late, up to 7 days after the original due date, with a 20% penalty. The last day to submit any graded work is the last day of classes.

If you **miss a quiz/exam** because you are ill or due to some other extenuating circumstance, you must contact the instructor **before the original quiz/exam time**, or **within 24 hours** after the original quiz/exam time. You must take the quiz/exam by the following Wednesday after the original quiz/exam date. If you do not follow these procedures, then you will receive a score of zero on the missed quiz/exam.

You are responsible for any material that you miss. Any work that is due on a day that you are absent is still due and will be considered late if turned in at a later time. Late work will not be accepted or graded unless you contact the instructor about it.

### Calculators

Calculators are permitted for homework but not allowed on quizzes or exams.

### Feedback and Grades

I will make every effort to provide feedback and grades within one week. (Exams will be returned one week after they are taken to allow time for make-ups). To keep track of your performance in the course, refer to My Grades in HuskyCT.

### Academic Integrity

Please respect your work and the work of others. Cheating will be taken seriously. Examples of things that will be addressed include, but are not limited to, communicating with anyone not explicitly allowed during any quiz or exam, representing another person's work as your own (this includes copying or paraphrasing a solution from a friend, solution manual, tutor, or website), or bringing unauthorized materials to any quiz or exam. Please review UConn's policies here: https://policy.uconn.edu/2023/07/11/academic-scholarly-and-professional-integrity-and-misconduct-aspim-policy-on/

### Weekly Time Commitment

You should expect to dedicate 9 to 12 hours a week to this course. This expectation is based on the various course activities, assignments, and assessments and the University of

Connecticut's policy regarding credit hours. (More information related to hours per week per credit can be accessed at the Online Student website).

## Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources, which include:

- The Student Code
  - Academic, Scholarly, and Professional Integrity and Misconduct
  - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

**Help**

Technical and Academic Help provides a guide to technical and academic assistance.
This course uses the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the Help Center. You also have 24x7 Course Support including access to live chat, phone, and support documents.

**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. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or http://csd.uconn.edu/.

**Tentative Course Schedule**

*Note: this schedule may change. Check the schedule on HuskyCT for the most up to date information.

| | Week of | Tuesday | Thursday |
|---|---|---|---|
| 1 | 1/19 | 1.1 Definitions &Terminology, Integration Review | 1.2 Initial-Value Problems |
| 2 | 1/26 | 2.1 Solution Curves without a Solution | 2.2 Separation of Variables<br>**Quiz 1: 1.1-1.2** |

| | | | |
|---|---|---|---|
| 3 | 2/2 | 2.3 Linear Equations | 2.4 Exact Equations<br>**Quiz 2: 2.1-2.2** |
| 4 | 2/9 | 2.5 Solutions by Substitutions | 2.6 A Numerical Method (Euler's Method)<br>**Quiz 3: 2.3-2.4** |
| 5 | 2/16 | 3.1 Linear Models<br>3.2 Nonlinear Models | **Exam 1** Covers Ch 1-2 |
| 6 | 2/23 | 4.1 Preliminary Theory-Linear Equations | 4.2 Reduction of Order (No WebAssign)<br>**Quiz 4: 3.1-3.2** |
| 7 | 3/2 | 4.3 Homogeneous Linear Equations with Constant Coefficients | 4.4 Undetermined Coefficients-Superposition Approach<br>**Quiz 5: 4.1-4.2** |
| 8 | 3/9 | 4.6 Variation of Parameters | 7.1 Definition of the Laplace Transform<br>**Quiz 6: 4.3-4.4** |
| | 3/16 | **SPRING BREAK, NO CLASS** | |
| 9 | 3/23 | 7.2 Inverse Transforms and Transforms of Derivatives | 7.3 Operational Properties I (Translation on t- or s-axes)<br>**Quiz 7: 4.6, 7.1** |
| 10 | 3/30 | 7.4 Operational Properties II (Derivatives, Convolution, Periodic Functions) | Review of Ch 7<br>**Quiz 8: 7.2-7.3** |
| 11 | 4/6 | Review | **Exam 2** Covers Ch 4, 5, 7 |
| 12 | 4/13 | B.1 Basic Definitions and Theory<br>B.2 Gaussian and Gauss-Jordan Elimination (No WebAssign) | B.3 The Eigenvalue Problem<br>**No Quiz** |
| 13 | 4/20 | 8.1 Preliminary Theory- Linear Systems | 8.2 Homogeneous Linear Systems<br>**Quiz 9: B.1-B.3** |
| 14 | 4/27 | Additional Notes: Plotting Phase Portraits | Review/Catch up |
| 15 | 5/4 | **CUMULATIVE FINAL EXAM TBD** | Schedule determined by registrar's office, you must get approval from the Dean of Students to reschedule the final exam |