Math 2410Q-010
Elementary Differential Equations
Spring 2024

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: MWF 12:20 – 1:10, Mont 110

Instructor Information

Professor: Nicole Massarelli, (You can call me Nicole or Professor Massarelli)
Pronouns: (she/her/hers)
Email: nicole.massarelli@uconn.edu
Office: Mont 303
Office Hours/Availability: Mondays 3:00 – 4:30, Wednesdays 1:30 – 3:00, 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.

Course Materials

The textbook for this course is A First Course in Differential Equations with Modeling Applications by Dennis G. Zill, 11th edition that comes bundles with a WebAssign access code for online homework.

Course Description

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.

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.

Course Requirements and Grading

Category	Overview	Weighting
Online HW	Due Weekly on WebAssign	15%
Quizzes	Weekly quizzes on Fridays except for exam weeks. Quizzes will cover the material from the previous week.	15%
In-class Worksheets	Worksheets will be done in class and graded for completion. Weeks with worksheets will be indicated on the course schedule with a *.	10%
Chapter Exams	3 exams will be given during the semester.	15% each
Final Exam	Cumulative Final Exam will be given during Final Exam Week	15%

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. There will be automatic extensions (2 days) up to 14 days after the original due date, with a **20% penalty**.

Quizzes

There will be a weekly quiz on Fridays except when we have an Exam. Quizzes will consist of two problems related to the material covered during the previous week. You can retake up to 2 quizzes (these include makeup quizzes). If you miss a quiz or choose to do a quiz retake, then you will need to send me your schedule so I can schedule a makeup/retake you. Quiz retakes must be completed **before class on the following Wednesday**.

In-class Worksheets

We will also occasionally 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. Weeks with one or more worksheets are indicated on the course schedule with a *.

Exams

There will be three chapter 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. 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.

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 14 days after the original due date, with a 20% penalty.

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 and encouraged 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 Integrity
  - 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	Monday	Wednesday	Friday
1	1/15		1.1 Definitions and Terminology	1.1 Definitions and Terminology 1.2 Initial-Value Problems
2*	1/22	2.1 Solution Curves without a Solution	2.2 Separable Equations	2.2 Separable Equations **Quiz 1**
3	1/29	2.3 Linear Equations	2.3 Linear Equations 2.4 Exact Equations	2.4 Exact Equations **Quiz 2**
4*	2/5	2.5 Solutions by Substitutions	2.6 A Numerical Method (Euler's Method)	2.6 Cont. **Quiz 3**
5*	2/12	3.1 Linear Models 3.2 Nonlinear Models	Review	**Chapter 1+2 Exam (Fri, 2/16)** Covers 1.1,1.2, 2.1-2.6
6	2/19	4.1 Preliminary Theory-Linear Equations	4.2 Reduction of Order (No WebAssign)	4.3 Homogeneous Linear Equations with Constant Coefficients **Quiz 4**
7	2/26	4.4 Undetermined Coefficients-Superposition Approach	Finish 4.4 4.6 Variation of Parameters	4.6 Cont. **Quiz 5**
8*	3/4	Review 4.4 and 4.6	Review/Catch up	**Chapter 4 Exam (Fri, 3/8)** Covers 4.1-4.4, 4.6
	3/11	SPRING BREAK, NO CLASS		
9	3/18	5.1 Linear Models: Initial-Value Problems (No WebAssign)	7.1 Definition of the Laplace Transform	7.2 Inverse Transforms and Transforms of Derivatives **No Quiz**
10	3/25	7.2 Review 7.3 Operational Properties I (Translation on t- or s-axes)	7.3 Cont.	7.4 Operational Properties II (Derivatives, Convolution, Periodic Functions) **Quiz 6**

11*	4/1	7.4 Cont.	Review for Exam	**Chapter 7 Exam (Fri, 4/5)** Covers 7.1-7.4
12*	4/8	B.1 Basic Definitions and Theory	B.2 Gaussian and Gauss-Jordan Elimination (No WebAssign) B.3 The Eigenvalue Problem	B.3 Cont. **Quiz 7**
13	4/15	8.1 Preliminary Theory-Linear Systems	8.2 Homogeneous Linear Systems	8.2 Cont. **Quiz 8**
14*	4/22	Additional Notes: Plotting Phase Portraits	Phase Portraits cont. Review/Catch up	Review for Final Exam
	4/29	**Final Exam Week, Date and Time TBD**		