MATH 2410Q: Elementary Differential Equations
Fall 2021

Basic Information:

Instructor: Nhu Ngoc Nguyen. Website: https://math.uconn.edu/person/nhu-nguyen/
Schedule: 1:25pm - 2:15pm, MoWeFr, MONT 319
Office Hours: 2:15pm - 4:15 pm, Monday and Wednesday or by appointments
My office: MONT 127

Text: The required textbook for the course is "A First Course in Differential Equations with Modeling Applications" by Dennis G. Zill (11^{th} edition). The textbook comes bundled with an access code for WebAssign, which we will use to complete online homework. You can buy the bundle for $80 at the bookstore. The code can be purchased on its own, but it is $100. I recommend taking advantage of the excellent bundle price!

Homework: Homework will be completed online via WebAssign, which you should access via our course in HuskyCT. The assignments will be posted on ***Friday*** and will be due on ***next Friday at 11:59 PM***. Please do not wait to start them until Friday night as extensions will likely not be granted, and it is easier to get answers to questions when asked earlier.

Quizzes: You should expect a weekly quiz on ***Wednesday, 2:00pm-2:15pm***. These will be graded for completion, but you should take them seriously as practice. You can best prepare by looking over the class notes, homework problems, and by working through some extra problems in the book as needed.

Exams: Exam 1 will be in class ***Friday, September 17th***, Exam 2 will be in class ***Friday, October 1st***, Exam 3 will be in class ***Friday, October 29th***, and Exam 4 will be in class ***Friday, November 12th***. Please note that we have only 50 minutes for each meeting and thus, we will have ***50 minutes-long exams.***

The Final Exam date and time is TBD. You are expected to be available finals week.

If you need to reschedule an exam for any reason, please talk to the 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.

Grading:

WebAssign Homework	20%
Quizzes	20%
Exam 1, 2, 3, 4	40%
Final	20%

The grading scale used will be 92.5%+ A, 89.5-92.49 A-, 86.5-89.49 B+, 82.5-86.49 B, etc., though the grade thresholds may be lowered at my discretion. For example, a 93% guarantees you an A in the course, but a 91% or 92% may be an A.

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. Consequences may include, but are not limited to, a score of zero on the assignment, quiz, or exam, or a grade of F in the course. To read UConn's full policy on Academic Integrity, visit community.uconn.edu/the-student-code-appendix-a/

How to Succeed in This Course: You should attend each class meeting and complete all assignments. It would be best to read through the material before the week begins to get an idea of what we will cover (see course schedule). [***I will also regularly post my upcoming lectures before each meeting.***] This will help you to follow the topics and ideas more closely and ask questions that will better help you to understand the concepts and mechanics. I cannot stress enough the importance of practicing mathematics regularly. ***Before each exam, I will regularly post a review note as a reference. That sketches main stuffs you should focus on; however, you still should have your own plan in reviewing. Sometimes, sample exams or homework are available for your additional practices.***

Attendance: As previously stated, you should plan to attend every meeting of this course. This course covers a lot of material, and you are expected to do an appropriate amount of work outside of class, which will probably consist of more practice than just the problems on the homework assignments. There will be ample opportunities for questions and review, which are designed to lessen the burden of work outside of the classroom and give you a chance to ask questions as you come across them and work closely with me and other students.

If you absolutely need to miss class on one or more instances, please discuss this with me as soon as possible. You are responsible for any material that you miss. Any homework 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. There will be no makeup quizzes.

Grading Policy: Your quizzes, and exams will be returned to you in class. After returning your graded exams, I will also usually give you a day so that you can check over that. If there are any issues, please talk to me after class or in office hours to resolve it. After that, if I do not hear any issue from you, that will be your grade.

Extra Credit: There is no extra credit in this course. Make sure to study and be prepared; it is easier to be proactive than reactive. If you are in a specific program (such as honor program) and want to do a specific conversion (such as an honor conversion), please contact directly to me to discuss such a process.

Calculators: Calculators are permitted and encouraged for homework, and they can be helpful for learning to visualize solutions and their behavior (as well as online software and programs such as Matlab). However, you will **NOT** be allowed to use a calculator on a quiz or exam; they will be written in a way that calculators will not be necessary to complete them.

Course Outline: (this is tentative and could change)
(*) indicates a week with homework

Week	Date	Topic(s) Covered
1	8/30 9/1 9/3	1.1 Definitions and Terminology 1.2 Initial-Value Problems 1.3 Differential Equations as Mathematical Models
2*	9/6 (no class) 9/8 9/10	**Labor Day, NO CLASS** 2.1 Solution Curves without a Solution 2.2 Separable Equations
3	9/13 9/15 9/17	2.3 Linear Equations Review section **Exam 1 (Friday, September 17th) Covers 1.1-1.3, 2.1-2.3**
4*	9/20 9/22 9/24	2.4 Exact equation 2.5 Solutions by Substitutions
5	9/27 9/29 10/1	2.6 A Numerical Method (Euler's Method) Review section **Exam 2 (Friday, October 1st) Covers 2.3-2.6**
6*	10/4 10/6 10/8	3.1 Linear Models 3.2 Nonlinear Models 3.3 Modeling with Systems of First-Order Equations
7*	10/11 10/13 10/15	4.1 Preliminary Theory-Linear Equations 4.2 Reduction of Order (No WebAssign, not on quizzes/exams) 4.3 Homogeneous Linear Equations with Constant Coefficients
8*	10/18 10/20 10/22	4.4 Undetermined Coefficients- Superposition Approach 4.6 Variation of Parameters
9	10/25 10/27 10/29	5.1 Linear Models: Initial-Value Problems Review Section **Exam 3 (Friday, October 29th) Covers 4.1, 4.3, 4.4, 4.6**
10*	11/1 11/3 11/5	7.1 Definition of Laplace Transform 7.2 Inverse Transforms and Transforms of Derivatives 7.3 Operational Properties I (Translation on t or s axes)
11	11/8 11/10 11/12	7.4 Operational Properties II (Derivatives, Convolution, Periodic Functions) Review section **Exam 4 (Friday, November 12th) Covers 7.1-7.4**
12*	11/15 11/17 11/19	B.1 Basic Definitions and Theory B.2 Gaussian and Gauss-Jordan Elimination B.3 The Eigenvalue Problem
	11/21-11/27	**Thanksgiving Recess, NO CLASS**
13	11/29 12/1 12/3	8.1 Preliminary Theory- Linear Systems 8.2 Homogeneous Linear Systems Additional Notes: Plotting Phase Portraits

14	12/6 12/8 12/10	Review sections for Final Exam
15	12/13-12/19	**Final Exam Week, Date and Time TBD**