MATH 2410Q: Differential Equations

Spring 2023

Basic Information:

Instructor: Kim Savinon
Office: MONT 422
Office Hours: Mondays 9:30-11 AM and Wednesdays 1-2:30 PM
Email: kimberly.savinon@uconn.edu
*Please make sure to state which course/section you are in when you send emails!

Class Meetings: MWF
Section 006: 8-8:50 AM in MONT 110
Section 004: 11:15 AM-12:05 PM in MONT 419

Text: The *optional* 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. If you have taken a Calculus course at UConn previously (1131Q, 1132Q, and/or 2110Q), then you likely already have access and don't need to do anything. If not, you can buy the bundle at the bookstore. You can also get Cengage Unlimited if you have other Cengage courses and/or don't want a physical book.

Homework: Mathematics is best learned over time and with regular practice, and a majority of this learning occurs outside of the classroom. I encourage you to try and do as much work as you can without looking at your book and notes, which will be incredibly beneficial in diagnosing what you need to practice most while studying for the quizzes/exams.

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. Please do not wait to start them until Wednesday night. It is easier to get answers to questions when asked earlier. You will get 5 attempts to answer each question. After each attempt, you will be told whether or not your answer is correct. 5% extra credit can be earned by completing homework questions 48 hours before the due date, that is, by Mondays at 11:59 PM before the due date. There will be automatic extensions (2 days, up to 14 days after 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 3 quizzes (these include makeup quizzes). If you miss a quiz or choose to do 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.

Exams: There will be two exams and the timing is indicated on the schedule. 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 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.

Grading:

WebAssign Homework	20%
Quizzes	20%
Exam 1	20%
Exam 2	20%
Final Exam	20%

The grading scale used will be 93%+ A, 90-92.99 A-, 87-89.99 B+, 83-86.99 B, etc.

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). 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.

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 and worksheets. 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.

Late Work Policy: 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.

Course Outline: (this is tentative and could change)

Week	Week of	Topic(s) Covered	
1	1/16	1.1 Definitions and Terminology 1.2 Initial-Value Problems	Webassign due 1/25 Quiz 1 on 1/27
2	1/23	2.1 Solution Curves without a Solution 2.2 Separable Equations	Webassign due 2/1 Quiz 2 on 2/3
3	1/30	2.3 Linear Equations 2.4 Exact Equations	Webassign due 2/8 Quiz 3 on 2/10
4	2/6	2.5 Solutions by Substitutions 2.6 A Numerical Method (Euler's Method)	Webassign due 2/15 Quiz 4 on 2/17
5	2/13	3.1 Linear Models 3.2 Nonlinear Models	Webassign due 2/22 No Quiz
6	2/20	4.1 Preliminary Theory-Linear Equations Review for Exam 1 **Exam 1 (Fri, 2/24) Covers 1.1-1.2, 2.1-2.6, 3.1-3.2**	Webassign due 3/1 Quiz 5 (just 4.1) on 3/3
7	2/27	4.2 Reduction of Order (No WebAssign) 4.3 Homogeneous Linear Equations with Constant Coefficients 4.4 Undetermined Coefficients- Superposition Approach	Webassign due 3/8 Quiz 6 on 3/10
8	3/6	4.6 Variation of Parameters 5.1 Linear Models: Initial-Value Problems (No WebAssign)	Webassign due 3/22 Quiz 7 on 3/24
	3/13	**SPRING BREAK, NO CLASS**	
9	3/20	7.1 Definition of the Laplace Transform 7.2 Inverse Transforms and Transforms of Derivatives	Webassign due 3/29 Quiz 8 on 3/31(No 5.1)
10	3/27	7.3 Operational Properties I (Translation on t- or s-axes) 7.4 Operational Properties II (Derivatives, Convolution, Periodic Functions)	Webassign due 4/5 No Quiz
11	4/3	B.1 Basic Definitions and Theory Review for Exam 2 **Exam 2 (Fri, 4/7) Covers 4.1-4.6, 7.1-7.4**	Webassign due 4/12 Quiz 9 (B.1) on 4/14

12	4/10	B.2 Gaussian and Gauss-Jordan Elimination B.3 The Eigenvalue Problem	Webassign due 4/19 Quiz 10 on 4/21
13	4/17	8.1 Preliminary Theory- Linear Systems Review complex numbers 8.2 Homogeneous Linear Systems	Webassign due 4/26 Quiz 11 on 4/28
14	4/24	Additional Notes: Plotting Phase Portraits Review for Final Exam	No quiz
	5/1	**Final Exam Week, Date and Time TBD**	