MATH 2410Q: Differential Equations

Spring 2023

Basic Information:

Instructor: Rachel Bailey
Office: MONT 422
Office Hours: Wednesdays 9am-10am, Thursdays 5pm-6pm
Email: rachel.bailey@uconn.edu
*Please make sure to state which course/section you are in when you send emails!

Class Meetings: MWF in MONT 112
Section 012: 11:15am-12:05pm
Section 014: 12:20pm-1:10pm

Text: The 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 for $120 at the bookstore. You can also get Cengage Unlimited for $120 if you have other Cengage courses and/or don't want a physical book.

Homework: Homework will be completed online via WebAssign, which you should access through our course in HuskyCT. 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 as it is easier to get answers to questions when asked earlier.

You can 1 request auto extension per homework assignment in WebAssign (up to 14 days after the assignment is due). Once you request an extension, you have 2 extra days to complete the assignment for up to 50% of your unearned points.

Quizzes: There will be a weekly quiz on Fridays. 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 and want to do a makeup, or you want to do a retake of a quiz you already took, then you must email me to schedule a time.
Quiz makeups must be completed before class on Wednesday following the missed quiz. If you choose to do a retake, then you have one week after the quiz is returned to take the retake.
Example: Oh no! I slept really late and missed a quiz today, 1/20/2023! I need to email Rachel ASAP and take my retake before class on Wednesday, 1/25/2023.

Recap Presentations: At the beginning of each class, instead of me giving a recap of what was covered during the previous lecture, you each will be given the opportunity to give a 5 minute presentation which reviews the important topics/ideas covered in the previous class. Myself and the rest of the class will ask questions (if we have any). If you can't answer a question, no worries! You can "tag-in" a fellow classmate to help answer the question. Anyone who helps answer a question will receive 1 point towards the next exam (you can earn a maximum of 2 "tag-in" bonus points per exam = 4% bonus!). The presentations will be graded on completion.

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.

The Final Exam will be 3 parts: Part 1 will be material from Exam 1, Part 2 will be material from Exam 2 and Part 3 will be the remaining material. Part 1 and Part 2 are just opportunities to recover if you didn't do as well as you hoped on Exam 1 and Exam 2. The final exam score will just be the score from Part 3.

Exam grading:
Exam 1 grade = max(Exam 1, Final Part 1)
Exam 2 grade = max(Exam 2, Final Part 2)
Final Exam grade = Final Part 3

*Notice if you do well on Exam 1 and Exam 2 then you don't have to do Part 1 and Part 2 of the Final Exam (unless you want to do it for funzies).

If you need to reschedule an exam for any reason, please talk to me 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
15%
Recap Presentations
5%
Quizzes
20%
Exam 1/2 (each)
20%
Final Exam
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.

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. Do not use online sources like Chegg, etc, for homework answers. I'm here to help! Please email me if you're stuck on homework. You learn a lot from working through problems and this will benefit you greatly when it comes to preparing for exams.

Attendance: As previously stated, you should plan to attend every meeting of this course. There will be ample opportunities for questions and review during class, 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.

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.

Extra Credit: The opportunities for extra credit will be through"tag-in" answers and there will be one bonus question on each exam. These bonus questions will be based on the theory and probably not numerical.

Calculators: Calculators are permitted 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	WA due 1/25 Quiz 1 on 1/27
2	1/23	2.1 Solution Curves without a Solution 2.2 Separable Equations	WA due 2/1 Quiz 2 on 2/3
3	1/30	2.3 Linear Equations 2.4 Exact Equations	WA due 2/8 Quiz 3 on 2/10
4	2/6	2.5 Solutions by Substitutions 2.6 A Numerical Method (Euler's Method)	WA due 2/15 Quiz 4 on 2/17
5	2/13	3.1 Linear Models 3.2 Nonlinear Models	WA 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**	WA 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	WA 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)	WA 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	WA 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)	WA due 4/5 No Quiz
11	4/3	B.1 Basic Definitions and Theory Review for Exam 2	WA due 4/12 Quiz 9 (B.1) on 4/14

		Exam 2 (Fri, 4/7) Covers 4.1-4.6, 7.1-7.4	
12	4/10	B.2 Gaussian and Gauss-Jordan Elimination B.3 The Eigenvalue Problem	WA 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	WA 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**	