University of Connecticut
Math 2410Q-005, Elementary Differential Equations, Spring 2019

Instructor Information

Instructor: Hyun Chul Jang
Email: hyun.c.jang@uconn.edu (Expect responses only between the hours of 9am and 6pm.)
Office: Monteith, Room 322
Office Hours: Mondays, Tuesdays, and Wednesdays from 9:00-10:00 am, and by appointment.

Course Description and Requirements

Qualitative, analytical and numerical methods for first and second order single ordinary equations as well as first order constant coefficient linear system and some special nonlinear systems. Laplace transform and its application to differential equations.

Text: *A First Course in Differential Equations with Modeling Applications* 11th ed., by Dennis G. Zill

Prerequisites: MATH 1132, or 121. Recommended preparation: a grade of C- or better in MATH 1132; and MATH 2110 or 220. Not open for credit to students who have passed MATH 2420. Open to sophomores or higher. Familiarity with a few concepts in linear algebra (MATH 2210) will also prove useful.

Calculators: You are welcome to use calculators while working on homework. They will *not* be allowed during exams.

Assessments

WebAssign: (worth 20% of your grade)
To access WebAssign, follow the link given on HuskyCT. If you have any trouble, contact me.

Exams:
There will be three exams in total:

- Exam 1 (Friday, February 22, worth 25% of your final grade)
- Exam 2 (Friday, March 29, worth 25% of your final grade)
- Final exam (Date to be announced, cumulative, worth 30% of your final grade)

Make-Up Work

Unexcused absence during exams will be tolerated only in highly unusual documented circumstances (e.g., hospitalization). You may arrange with me well in advance if accommodations are needed. If you do miss a class, consult the on-line schedule to see what you missed.

Tentative Schedule

A tentative outline for the course can be found on the following page.

Academic Integrity

Integrity is a vital to a successful and rewarding academic experience. You are expected to observe the University's Academic Integrity Policy while participating in this course. Academic misconduct of any sort is subject to the consequences outlined therein. More information can be found at the Office of Community Standards.

Special Accommodations

Student athletes and students with disabilities should inform me of their commitments as an athlete, or any special needs that they have, etc. within the first three weeks of the semester. A letter from the Athletics Department or the Center for Students with Disabilities will be required for accommodations to be given. For more information on academic accommodations (including religious observances) visit the University of Connecticut Policy & Procedures website.

Disclaimer

I reserve the right to make changes to this document in partiality or entirety at any point during the semester.

Week	Material
1 1/22 - 1/25	1.1 Definitions and terminology 1.2 Initial value problems 1.3 Differential equations as mathematical models
2 1/28 - 2/1	2.1 Solution curves without a solution (Direction fields/Autonomous) 2.2 Separable equations
3 2/4 - 2/8	2.3 Linear Equations 2.4 Exact Equations
4 2/11 - 2/15	2.5 Solutions by substitutions
5 2/18 - 2/22	2.6 A Numerical Method (Euler's Method) **Exam 1** covering: 1.1 - 1.3, 2.1 - 2.6
6 2/25 - 3/1	3.1 Linear Models 3.2 Nonlinear Models 3.3 Modeling with Systems of First-Order Equations
7 3/4 - 3/8	4.1 Preliminary Theory- Linear Equations 4.3 Homogeneous Linear Equations with Constant Coefficients
8 3/11 - 3/15	4.4 Undetermined Coefficients- Superposition Approach 4.6 Variation of Parameters
9 3/18 - 3/22	Spring break, no class
10 3/25 - 3/29	5.1 Linear Models: Initial-Value Problems (Spring/Mass Systems, Circuits) **Exam 2** covering: 3.1 - 3.3, 4.1, 4.3, 4.4, 4.6, 5.1
11 4/1 - 4/5	7.1 Definition of the Laplace Transform 7.2 Inverse Transforms and Transforms of Derivatives
12 4/8 - 4/12	7.3 Operational Properties I 7.4 Operational Properties II
13 4/15 - 4/19	B.1 Basic Definitions and Theory B.2 Gaussian and Gauss-Jordan Elimination B.3 The Eigenvalue Problem
14 4/22 - 4/26	8.1 Preliminary Theory- Linear Systems 8.2 Homogeneous Linear Systems
15 4/29 - 5/3	8.2 Homogeneous Linear Systems (continued) Review for Final
Finals week 5/6 - 5/10	Finals week. **Final exam**, cumulative, date and location to be announced.