ELEMENTARY DIFFERENTIAL EQUATIONS
MATH 2410Q
SECTION 006

Course Information

- **Course:** Math 2410Q Section 006
- **Text:** "A First Course in Differential Equations with Modeling Applications" by Dennis Zill (11th ed.)
- **Time:** 12:30 - 1:45 pm TTh (virtual)

Instructor Information

- **Instructor:** Sijing Liu
- **Office:** MONT 308
- **Office Hours:** By appointment (virtual)
- **Email:** sijing.liu@uconn.edu

Course Description

- Introduction to ordinary differential equations and their applications, linear differential equations, systems of first order linear equations and numerical methods.

Graded Work

Final Exam	Comprehensive	30%
Exams	Two exams	60% (30% each)
Online Homework (WebAssign)	Varies	10%

The Final Exam: The final will be scheduled by the registrar.

A WebAssign Code:

- This can be purchased as a bundle with the textbook through the UConn Bookstore. Alternatively a code can be purchased directly from WebAssign and the textbook purchased elsewhere.

Grading Scale

A	93-100
A-	90-93
B+	87-90
B	83-87
B-	80-83
C+	77-80
C	73-77
C-	70-73
D+	67-70
D	63-67
D-	60-63
F	0-59

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Exam Schedule (tentative)

Exam 1: **Thursday October 1st**. Topics covered: 1.1-1.3, 2.1-2.6.
Exam 2: **Thursday November 12th**. Topics covered: 3.1-3.3, 4.1, 4.3, 4.4, 4.6, 5.1, 7.1-7.4
Final Exam: scheduled by the registrar.

Topics Covered

- Chapter 1
  - 1.1 Definitions and Terminology
  - 1.2 Initial-Value Problems
  - 1.3 Differential Equations as Mathematical Models
- Chapter 2
  - 2.1 Solution Curves without a Solution (Direction Fields/Autonomous)
  - 2.2 Separable Equations
  - 2.3 Linear Equations
  - 2.4 Exact Equations
  - 2.5 Solutions by Substitutions
  - 2.6 A Numerical Method (Euler's Method)
- Chapter 3
  - 3.1 Linear Models
  - 3.2 Nonlinear Models
  - 3.3 Modeling with Systems of First-Order Equations
- Chapter 4
  - 4.1 Preliminary Theory- Linear Equations
  - 4.3 Homogeneous Linear Equations with Constant Coefficients
  - 4.4 Undetermined Coefficients- Superposition Approach
  - 4.6 Variation of Parameters
- Chapter 5
  - 5.1 Linear Models: Initial-Value Problems (Spring/Mass Systems, Circuits)
- Chapter 7
  - 7.1 Definition of the Laplace Transform
  - 7.2 Inverse Transforms and Transforms of Derivatives
  - 7.3 Operational Properties I
  - 7.4 Operational Properties II
- Chapter 8
  - 8.1 Preliminary Theory-Linear Systems
  - 8.2 Homogeneous Linear Systems
- Optional sections that might be included if we have extra time:
  - 4.2 Reduction of Order
  - 4.7 Cauchy-Euler Equations
  - 5.3 Nonlinear Models
  - 9.1 Euler Methods and Error Analysis
  - 9.2 Runge-Kutta Methods