MATH 2410Q – 331 **Elementary Differential Equations** **Spring 2026**

(Online – Asynchronous)

01/20/2026 to 05/09/2026

Instructor: Dr. Vindya Pathirana

Let me introduce myself to you:

I earned my Ph.D. in Mathematics from the University of South Florida in August 2015, a year before joining UConn Waterbury. My research interests include Mathematical Finance, Probability and Statistics, Data Analysis, Pattern Recognition through Machine Learning, Statistical Learning, and Decision-Making.

I have had a passion for helping my younger siblings, friends, and peers with their math struggles since I was young. When I look back, I can now understand why I am a MATH professor today. I realize that my love for Mathematics stems from my ability to find beauty in things that are not visible to the naked eye. That might also be the reason for my fondness towards music.

I hold honor, honesty, and integrity in high regard. I strongly believe that every strength has a corresponding weakness, and every weakness presents an opportunity for growth. Achieving balance in life requires managing both.

How can you contact me?	How can you meet me?	How can you access class materials?
Dr. Vindya Pathirana (Dr. V) vindya.pathirana@uconn.edu	**Online via WebEx** **Tuesday** **10:00 AM – 5:00 PM** Use Nexus to make 30 minutes appointments.	**Online on HuskyCT**

Important!

- *As this course is offered in the online-asynchronous format, there won't be scheduled meetings.*
- *You will have access to the course materials, including lecture notes, lecture recordings, and workout example recordings online in **HuskyCT**.*
- *All times for due dates (Exams, WebAssign HW, Worksheets) and online office hours in this course are given in **US Eastern Time (EST)**.*
- *Success in this course is dependent upon the amount of time and effort spent working through the homework to understand the material not the time and effort spent memorizing and imitating examples.*

How will the Lectures be Delivered?

All course instructions will be delivered remotely and asynchronously. You will have access to the course materials, including lecture notes, lecture recordings, and workout example recordings online on HuskyCT. The online videos can be watched anytime convenient, but I strongly urge you to watch them during the week they are listed on the Course Schedule.

How Can I Communicate with the Instructor?

Announcements and essential course information will be sent through HuskyCT, UConn's learning management system (or UConn email). It is the student's responsibility to check messages and announcements daily. This is particularly important for transfer/nondegree students, so please check your UConn email account regularly.

Students should communicate with the instructor via email, HuskyCT message system, or through the Campuswire Discussion Board (a link will be provided at the start of the semester on HuskyCT). All questions related to course content may be posted on the discussion board. You can ask general questions about the course material on Campuswire, and I will respond so that everyone can benefit from the Q&A.

What will You Learn in This Course?

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.

What is the Prerequisite?

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. *It is assumed that the students have a working knowledge of all material covered in the prerequisite courses. Students are strongly encouraged to ask questions during class, instructor office hours, using HuskyCT discussion board, and via e-mail.*

What is the Expected Weekly Time Commitment?

You should expect to dedicate 9 to 12 hours a week to this course. This expectation is based on the various course activities, assignments, and assessments and the University of Connecticut's policy regarding credit hours. (More information related to hours per week per credit can be accessed at the Online Student website).

What are the Required Materials?

Cengage/WebAssign access and the Husky Book Bundle:

The textbook for the course is ***A First Course in Differential Equations with Modeling Applications" by Dennis G. Zill*** **(12th edition)** which is bundled with a WebAssign access code for online homework.

This course is part of the campus' course material delivery program. If you do not opt out of the ***Husky Book Bundle****, the digital materials required for this course have been integrated with Blackboard and can be found in the Course Materials link in your Blackboard course. Please sign into HuskyCT to access your course and course materials. For more information about the* Husky Book Bundle click here.

What Happens If You Opt Out of Husky Book Bundle?

- The textbook can be purchased at the UConn bookstore.

What Topics will be Covered?

The course is divided into three modules, with each module followed by an exam. Please refer to the course calendar for the topics scheduled for each day of the semester. Below is the list of topics for each unit, along with the course schedule:

Module 1: Integration to Differential Equations and First-Order Equations.

Dates: January 20th → February 18th

Sections covered:

- 1.1 – Definitions and Terminology.
- 1.2 – Initial Value Problems.
- 1.3 – Differential Equations as Mathematical Models.
- 2.1 – Solution Curves without a Solution.
- 2.2 – Separable Equations.
- 2.3 – Linear Equations.
- 2.4 – Exact Equations.
- 2.5 – Solutions by Substitutions.
- 2.6 – A Numerical Method.

Exam 1: *Wednesday, February 18th*

Module 2: Modelling with First-Order Differential Equations and Higher Order Differential Equations.

Dates: February 19th → March 25th

Sections covered: 3.1 – Linear Models.

- 3.2 – Nonlinear Models.
- 3.3 – Modelling with systems of First-Order DE.
- 4.1 – Theory Linear Equations.

- 4.3 – Homogenous Linear Equations with Constant Coefficients.
- 4.4 – Undetermined Coefficients—Superposition Approach.
- 4.6 – Variation of Parameters.

Exam 2: *Wednesday, March 25th*

Module 3: Modelling with Higher-Order Differential Equations, The Laplace Transform, and Systems of Linear Differential Equations.

Dates: March 26th → April 29th

Sections covered:

- 5.1 – Linear Models: Initial-Value Problems.
- 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.
- B1 – Matrices: Basic Definitions and Theory.
- B3 – The Eigenvalue Problem.
- 8.1 – Theory of Linear Systems.
- 8.2 – Homogeneous Linear Systems.

Exam 3: *Wednesday, April 29th*

What digital technology tools and equipment will you need for this course?

Most of the course assessments (Exams and worksheets) will require you to upload a pdf of your work. For this, you will need access to a device that will allow you to scan and save your work as a pdf document, such as a scanner or scanner app on a smartphone. The software/technical requirements for this course include:

- HuskyCT/Blackboard access.
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- Respondus Lockdown Browser (install it through Blackboard)
- All proctoring will require the use of a webcam.

Minimum Technical Skills -

- Save files in commonly used word processing program formats.
- Copy and paste text, graphics or hyperlinks.
- Work within two or more browser windows simultaneously.
- Open and access PDF files and videos.

It is recommended (not mandatory) that you take Student Technology Training - a video training for students available on HuskyCT Institution page under "Useful Links for Students".

Can I use my Cell Phone?

Cell phones cannot be used as calculators. All cell phones must always be turned off and kept out of sight during exams.

Can I Use a Calculator?

Scientific and/or certain graphing calculators will be allowed on homework, worksheets, quizzes, and midterm exams.

- The TI-82, 83, 84, 84 plus, 85 or 86 models are recommended but not required.
- Calculators that can perform symbolic computations, such as models TI-89 and above, including TI-Nspire will **not** be permitted on exams or quizzes.

Although calculators are allowed, you must show all work on any written assignments (exams & worksheets).

Dates to Remember:

Tuesday, January 20	Spring semester begins
Monday, February 3	Last day to add or drop a course without additional signature. Courses dropped after this date will have a "W" for withdrawal recorded on the academic record.
Sunday, March 15 - Saturday, March 21	Spring Recess – No classes.
Monday, April 13	Last day to withdraw from a course.
Friday, May 1	Last day of Spring semester classes.
Saturday, May 2 – Sunday, May 3	Reading Day.
Monday, May 3 - Saturday, May 9	Final Examinations.
Tuesday, May 12	Semester grades are due at 4:00 PM

How will I be assessed in this course?

****** For all handwritten assessments, please note that all work must be shown ******

NO WORK = NO CREDIT

Midterm Exams (60%):

There will be 3-*midterm exams* given during the semester and each count 20% of your course grade.

Exam 1 – Chapter 1 & Chapter 2 - Wednesday, February 18

Exam 2 – Chapter 3 & Chapter 4 - Wednesday, March 25

Exam 3 – Section 5.1, Chapter 7, & Chapter 8 - Wednesday, April 29

Please Note: *Exam dates are tentative and subject to change depending on the progress of the course.*

Final Group Project (15%):

The project will involve the application of differential equations in your chosen field of study or any area of interest. This could be a creative interdisciplinary project. You can choose to address either well-defined problems or open-ended questions. Additional details will be provided as the semester progresses.

This project is to be completed in groups of 3-4 students, and no exceptions to this group size will be permitted. You will need to create a presentation, which can be a recorded video or an audio recording (using voice-over PowerPoint is acceptable).

WebAssign Homework (15%):

Homework assignments are accessed through the online homework system called WebAssign. On WebAssign, you also have an electronic copy of the textbook, together with other resources such as lecture videos & examples. There is an online homework assignment for each section we cover. **To access homework assignments**, go to the **HuskyCT**, and then **click on the WebAssign Homework link**.

*You will get **five attempts** for each question that is not multiple-choice and fewer than five attempts for each multiple-choice question; the exact number of attempts will depend on the number of choices.* After each attempt, you will be told whether your answer is correct or not.

*Warning: When accessing your online homework, use **Chrome or Firefox as your browser**; there are problems that can occur if you use Internet Explorer or Safari. Useful tips on using WebAssign can be found here.*

You may request an automatic extension (with no penalty) via WebAssign for each individual assignment within 3 days after the due date. This automatic extension will reopen the assignment for another 3 days after the due date. For example, if WebAssign HW 1.1 is due by 11:59 pm on Tuesday, January 27, 2026, and you request an extension on Wednesday, January 28, 2026, at 10:15 am, the automatic extension will reopen WebAssign HW 1.1 until 11:59 pm on Friday, January 30, 2026 If you request an extension for WebAssign HW 1.1 on Saturday, January 31, 2026, at 12:05 am, you will have missed the 3-day extension window.

Please note that you are unable to request an extension until AFTER the original due date has passed.

Participation (10%):

As part of your participation grade, you are required to

(i) complete weekly worksheets posted on HusckyCT.

(ii) interact with your peers through an online discussion board and/or virtual office hours.

You must earn 100 participation points during the semester to receive full credit for participation. Points can be earned in the following ways:

- ***Online Worksheets on HuskyCT:***
  For all sections covered (with few exceptions), there will be an associated worksheet given online on HuskyCT. You are allowed to use your notes and textbook. During a worksheet, using any other technology (search online, etc.) will be considered academic misconduct. Each worksheet will be graded based on submission and accuracy and worth 5 points. This amounts to a maximum of 80 total points within your participation score.
- ***Campuswire Class Feed and Online Office Hour Attendance:***
  You can earn the remaining points by actively participating in office hours and interacting on campuswire discussion board/class feed (asking and answering questions). Each active participant will earn 2 points per session during office hours. Interaction points are capped at 5 per week.

Grading Breakdown:

EVENT	PERCENTAGE
Final Project	15%
3 Midterm Exams	60%
WebAssign Homework	15%
Participation	10%
Total	**100%**

Grading Policy:

The plus/minus grading system will be used. If your overall percentage of total points falls into the following range, you will receive the corresponding grade:

GRADING SCALE			
$\geq 93\%$	**A**	[73%, 77%)	**C**
[90%, 93%)	**A-**	[70%, 73%)	**C-**
[87%, 90%)	**B+**	[67, 70%)	**D+**
[83%, 87%)	**B**	[63%, 67%)	**D**
[80%, 83%)	**B-**	[60%, 63%)	**D-**
[77%, 80%)	**C+**	< 60%	**F**

Exam, Homework, and Worksheet Policies

Make-Up/Late Policy

There will be no make-up and no extensions for any form of assessment (exams, homework, worksheets, etc.). Only extreme situations with an officially documented excuse will allow you to make up an assignment.

What Happens If I Miss an Exam?

If you have an approved reason for being unable to take an exam at its scheduled time, you must notify me in advance to make arrangements.

Students who cannot take an exam due to an emergency should email their instructor as soon as possible and within 24 hours. Arrangements for a make-up exam will be considered on a case-by-case basis and will be administered solely at the instructor's discretion.

If you are permitted to take a make-up exam, it must be done at a mutually agreed-upon time. No additional opportunities will be granted after this. Please note that make-up exams may incur a penalty of up to 10% of the grade earned, depending on the reason for the make-up. Failure to contact the instructor as stated will result in a grade of zero for the exam. This policy applies only to the first missed exam. Repeated offenses will be reviewed on a case-by-case basis but generally will not be allowed to be made up.

Please note that employment schedules, vacations, previously purchased tickets or reservations, graduations, social events (family reunions, etc.), misreading the assessment schedule, and oversleeping are not viable reasons for rescheduling an exam.

What Happens If I Miss an Online Worksheet?

During the semester, you will receive approximately 20 worksheets. Each worksheet can earn you up to 5 participation points. Since you do not need to submit all the worksheets to reach a total of 80 points, no make-up worksheets will be provided for any reason.

Will There be Any Extra Credit Opportunities?

Extra credit opportunities may be available to the whole class. These assignments cannot be offered to individual students at any time.

RESOURCES AND POLICIES

Instructor Office Hours and Campuswire

To receive additional support in this class, please make an appointment to meet with the instructor, post your questions on Campuswire, and join instructor office hours the day before each exam.

HuskyCT and UCONN Email:

All students are issued an official UCONN email address, which serves as the primary means of communication between students and instructors outside of class. Communication with the instructor can also occur through the HuskyCT messaging system. Class announcements and notes will be posted on HuskyCT, so students should check the platform regularly for updates and course materials. Additionally, students can view and track their grades through HuskyCT.

Email policy:

Any email you send to your instructor must have the subject heading: "**MATH 2410Q**". In the body of the e-mail, you must identify yourself (first and last names).

Request for Accommodations:

Student Disability Policy: The Center for Students with Disabilities (CSD) at UConn provides accommodation and services for qualified students with disabilities. If you have a documented disability for which you wish to request academic accommodation and have not contacted the CSD, please do so as soon as possible. Detailed information regarding the accommodations process is also available on their website or at www.csd.uconn.edu.

Academic Integrity and Disruption of Academic Process:

We expect the highest standard of academic integrity from our students. Any cheating will result in a failing grade for the assignment or the exam, and possibly for the course. This course expects all students to act in accordance with the Guidelines for Academic Integrity at the University of Connecticut. Because questions of intellectual property are important to the field of this course, we will discuss academic honesty as a topic and not just a policy. If you have questions about academic integrity or intellectual property, you should consult your instructor. Additionally, consult UConn's guidelines for academic integrity.

Zero Tolerance Policy -

If a student is caught cheating on any of the assessment components whether it is a single worksheet, or exams regardless of the weight of the assessment towards the final grade, the student shall receive a **F** for the entire course and will be reported to the community standards office. **No exceptions.**

Temporary Grades – I, N, or X: Please refer to office of the registrar/grades.
S-U Grade Policy: Please refer to office of the registrar/grades
Late Assignments: No late assignments will be accepted.

Miscellaneous Policies:

- State common law and federal copyright law protect my lectures, notes, handouts, assessments, and displays. Students are not authorized to provide copies of class materials to anyone else, or make commercial use of them without prior permission from me. Posting any of my assessments, including but not limited to exams, quizzes, and solutions to recommended problems to any website or social media site violates this policy.
- Please refer to the References for Syllabi Links for more information regarding important university policies. For other issues not addressed in this syllabus see the UCONN Undergraduate Student Catalog.

The Courses with a Q Designation:

This course is a Q course, meaning that it has been approved as meeting the General Education requirements for Quantitative competency. It is a university requirement that Courses with a Q designation should have the following attributes:

- Mathematics and/or statistics at or above the basic algebra level must be an integral part and used throughout the course.
- Courses must include use of basic algebraic concepts such as: formulas and functions, linear and quadratic equations and their graphs, systems of equations, polynomials, fractional expressions, exponents, powers and roots, problem solving and word problems. Formal abstract structures used in symbolic logic and other algebraic analyses are acceptable.
- Courses should require the student to understand and carry out actual mathematical and/or statistical manipulations and relate them to whatever data might be provided in order to draw conclusions. Merely feeding numerical data into a program on a computer or a calculator to obtain a numerical result does not satisfy this requirement. Technology should be viewed as a tool to aid understanding and not as a driver of content.

Your instructor reserves the right to make changes to the course syllabus and/or calendar for clarification, to correct any errors, or to adjust to the needs of the class (e.g. addressing learning pace, responding to student feedback, coping with unforeseen circumstances)

Syllabus last updated: 01/19/2026