MATH 3710
Mathematical Modeling

University of Connecticut

Spring 2022

General Information

Instructor: David T. McArdle

Class Time: T/Th 3:30-4:45PM in MONT 420

Email: DMcArdle@uconn.edu

Office Hours: Posted to HuskyCT

Prerequisites: MATH 2144Q or 2420Q; or MATH 2210 and 2410Q. Not open for credit to students who have passed MATH 5530 or 5540, CHEM 305, or PHYS 5350.

Textbook: There is no official textbook for the course. All course materials will be provided.

Course Description & Goals

Mathematical modeling is a course that relates mathematical fields such as calculus, differential equations and discrete mathematics to real life mathematical models in the social, physical, life and management sciences. The specific topics that will be considered include basic discrete and continuous population models, predator-prey models, and many more. The goals for MATH3710 are listed below:

After this course, we will be able to:

(1) demonstrate an understanding of how mathematical models can be implemented in the social, physical, life, and management sciences.

(2) apply various mathematical techniques from calculus, differential equations, and discrete mathematics to create and analyze models related to real-world phenomena.

(3) communicate solutions to mathematical modeling problems through the use of expository writing.

Grading

Final grades in the course will be computed via the following grading breakdown:

Graded Component	Weight
Daily Questions	15%
5 Read-Watch-React Assignments	10% (2% each)
5 Module Assessments	55% (11% each)
"Modeling Our Lives" Project	20%

A	[93, 100]	**B**	[83, 87)	**C**	[73, 77)	**D**	[63, 67)
A-	[90, 93)	**B-**	[80, 83)	**C-**	[70, 73)	**D-**	[60, 63)
B+	[87, 90)	**C+**	[77, 80)	**D+**	[67, 70)	**F**	< 60

Daily Questions

During each class period, we will have a "daily question" related to the content covered in lecture. You will have an opportunity to work together on the problem and submit your work for grading. DQ's will be graded based on completeness and correctness.

Read-Watch-React

Throughout the semester, I will assign videos and/or research articles for you to watch/read. You will be asked to respond to several prompts on HuskyCT and we will have a discussion in class as well. Due dates for these assignments will be announced 1 week ahead of time. There will be 5 assignments throughout the semester

Module Assessments

The course is divided into 5 different "modules". Each module will have its own cumulative assessment. Assessment types include in-class quizzes, take home quizzes, presentations, and homework assignments. Detail will be provided at the start of each module regarding the "Module Assessment".

"Modeling Our Lives" Project

Throughout the semester, you will complete a "Modeling Our Lives" project culminating during the final week of the semester. This project will involve finding a topic related to mathematical modeling that is of interest to you. You will then construct a "product" to share with your classmates. The product can be a presentation, video, written manuscript, along with other options. More details will be given about the specifics of this assignment at a later date.

Course Policies

Attendance

You are required to attend all class meetings and are responsible for what we discuss. If you miss a class meeting, you should talk with a classmate to figure out what you missed, get any handouts/materials you missed from the HuskyCT site, and get caught up as soon as possible.

Make-Up/Late Policy

There will be NO make-ups and NO extensions for any form of assessment (RWRs, quizzes, project submissions, etc.). Only extreme situations with an officially documented excuse will allow you to make up an assessment.

Academic Integrity

It is in your best interest to maintain your academic integrity. Any form of academic dishonesty undermines the goals of our course and devalues the learning process. Academic dishonesty is a serious offense at UConn and can result in a zero grade on an assessment and/or failure in the course.

University Writing Center

All UConn students are invited to visit the University Writing Center for free 45-minute individualized tutorials. You can drop in or make an appointment. For hours, locations, and more information, please go to `https://writingcenter.uconn.edu/`.

Accommodations for Students with Disabilities

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Center for Students with Disability: `http://www.csd.uconn.edu/`. They will determine with you what accommodations are necessary and appropriate. Students who think that they may need accommodations are encouraged to meet with me privately early in the semester.