UCONN
UNIVERSITY OF CONNECTICUT

**MATH 2210Q**
Applied Linear Algebra
Mathematics

# Syllabus -- Fall 2020

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

## Course and Instructor Information

**Course Title:** MATH2210Q Applied Linear Algebra
**Credits:** 3
**Format:** Distance learning
**Prerequisites:** MATH 1132 or 1152 or 2142. Recommended prep: grade of C- or better in MATH 1132.
Not open after passing MATH 2144, 3210, 3510, or 3710. Repeat restrictions apply: advising.uconn.edu/repeat-policy.

**Professor/Instructor/Facilitator:** Véronique Bazier-Matte
**Pronouns:** she/her/hers
**Email:** veronique.bazier-matte@uconn.edu
**Office Hours/Availability:** I will be available for video calls on Monday and Thursday afternoon from 4:30 p.m. to 5:30 p.m. Besides that, you can write to me (veronique.bazier-matte@uconn.edu) to ask me a question or schedule a video call with me (either on office hours in normal office hours, either at another moment of the week). I answer rapidly to emails, except during weekends.

## Course Materials

**Required course materials should be obtained the week of class**.

Required textbooks are available for purchase through the UConn Bookstore (or use the Purchase Textbooks tool in HuskyCT). Textbooks can be shipped (fees apply).

**Required Material:** Lay's 5th edition of Linear Algebra and Its Applications

*Additional course readings and media are available within HuskyCT, through either an Internet link or Library Resources*

## Course Description

The course is an introduction to the techniques of linear algebra with elementary applications.

## Course Objectives

By the end of the semester, you should be able to:

1. Master the concepts and techniques of linear algebra.
2. Apply these concepts and techniques to analysis of linear problems

## Course Outline

Module 1: Linear Equations in Linear Algebra
Module 2: Matrix Algebra
Module 3: Determinants
Module 4: Vector Spaces
Module 5: Eigenvalues and Eigenvectors
Module 6: Orthogonality

## Calendar and Class Meeting Schedule

**Plan of the Semester:** (subject to change)
September 1: Presentations and systems of linear equations
September 3: Row reduction and echelon forms
September 8: Vector equations
September 10: The matrix equation A**x = b**
September 15: Solution sets of linear systems
September 17: Linear independence
September 22: Introduction to linear transformations
September 24: The matrix of a linear transformation and beginning of the take-home test
September 29: Matrix operations
October 1: End of take-home test and the inverse of a matrix
October 6: Determinants
October 8: Cramer's rule, volume and linear transformations
October 13: Vector spaces and subspaces
October 15: Null spaces, column spaces and linear transformations
October 20: Linearly independent sets and bases
October 22: Coordinate systems
October 27: The dimension of a vector space and rank and beginning of the take-home test
October 29: Change of basis
November 3: End of take-home test and eigenvectors and eigenvalues
November 5: The characteristic equation and diagonalization
November 10: Eigenvectors and linear transformations
November 12: Inner product, length and orthogonality
November 17: Orthogonal sets
November 19: Orthogonal projection and Gram-Schmidt Process
December 1: Quiz (30 minutes) at 2:00 p.m. on BlackBoard Collaborate and revision
December 4: Revision
December 14: Final exam

**Online Meetings:**
September 1 at 2 p.m.: Presentation at https://us.bbcollab.com/guest/75f2dbf6ee4d47f7aaaa3788eba43c9e
September 3 at 2:30 p.m.: Study group
September 10 at 2:30 p.m.: Study group
September 17 at 2:30 p.m.: Study group
September 24 at 2:30 p.m.: Study group
October 1 at 2:30 p.m.: Study group
October 8 at 2:30 p.m.: Study group
October 15 at 2:30 p.m.: Study group
October 22 at 2:30 p.m.: Study group
October 29 at 2:30 p.m.: Study group
November 5 at 2:30 p.m.: Study group
November 12 at 2:30 p.m.: Study group
November 19 at 2:30 p.m.: Study group
December 1 at 2:00 p.m.: Quiz and revision
December 14 from 3:30 p.m. to 5:30 p.m.: Final exam

**Due Dates:**
September 6 at 5 p.m.: Homework 1 and summary 1
September 13 at 5 p.m.: Homework 2 and summary 2
September 20 at 5 p.m.: Homework 3 and summary 3
September 27 at 11:59 p.m.: Homework 4 and summary 4
October 4 at 11:59 p.m.: Homework 5 and summary 5
October 11 at 11:59 p.m.: Homework 6 and summary 6
October 18 at 11:59 p.m.: Homework 7 and summary 7
October 25 at 11:59 p.m.: Homework 8 and summary 8
November 1 at 11:59 p.m.: Homework 9 and summary 9
November 8 at 11:59 p.m.: Homework 10 and summary 10
November 15 at 11:59 p.m.: Homework 11 and summary 11
November 22 at 11:59 p.m.: Homework 12 and summary 12

## Course Requirements and Grading

**Summary of Course Grading:**

| Course Components | Weight |
|---|---|
| Participation in study groups | 5% |
| 12 weekly summaries | 5% |
| 12 weekly assignments | 30% |
| Take-home test 1 | 10% |
| Take-home test 1 | 10% |
| Quiz | 10% |
| Exam | 30% |

**Weekly Study Groups**
Each Thursday, the last 45 minutes of the class will be allowed to mandatory study groups. You will discuss with your colleagues about concepts explained in class and you may use this time to work on your assignments together.

**Weekly Summaries**
Each week, you will have to hand in on Sunday at 5:00 p.m. a short summary (about half a page) of your learning of the weeks. The goal of these summaries is to help you to revise the new concepts you have learned. You will have to handwrite your summary, scan it and upload it on HuskyCT. Each of these summaries is not graded, I simply read them and make sure you review properly the concept learnt throughout the week. If it not the case,

**Weekly Homework**
Each homework should take you less than one hour to complete and has a value of 2.5% of your semester. They are to be done online and they will be posted in HuskyCT. The goal of weekly assignments is to force you to keep pace with the class, to help you to determine what you understood correctly and what you need to do to improve and therefore, to ask me questions if you need. As the weekly summaries, You will have to handwrite your answers, scan it and upload it on HuskyCT.

**Take-home tests**
You will have one week to complete the take-home test. You may use lecture notes, the Internet and textbooks, but it is forbidden to discuss the test.

**Quizzes**
The quiz will be posted online and covers the new subjects since the last take-home test. The goal of this quiz is to give you an idea of what the final exam will look like and to give you feedback on your progress in the class.

**Final exam**
The final exam covers all the subjects in the semester. It will last 1h15 and you will have to turn on your camera. The goal of this exam is to evaluate your learning during the semester. You can use books during the exams, but you cannot use the Internet or communicate with anybody; this will be considered cheating.

For additional information on undergraduate grading policies see here: https://registrar.uconn.edu/grades/

For additional information on graduate grading policies see here (note that effective Fall, 2020, the grade of A+ no longer exists) https://gradcatalog.uconn.edu/grad-school-info/academic-regulations/#Grades

**Grading Scale:**

| Grade | Letter Grade | GPA |
|---|---|---|
| 94-100 | A | 4.0 |
| 90-93 | A- | 3.7 |
| 87-89 | B+ | 3.3 |
| 83-86 | B | 3.0 |
| 80-82 | B- | 2.7 |
| 77-79 | C+ | 2.3 |
| 73-76 | C | 2.0 |
| 70-72 | C- | 1.7 |
| 67-69 | D+ | 1.3 |
| 63-66 | D | 1.0 |
| 60-62 | D- | 0.7 |
| <60 | F | 0.0 |

**Due Dates and Late Policy**

All course due dates are identified in the calendar (section due dates). Deadlines are based on Eastern Time unless otherwise specified. *The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner.*

Late Policy.

- Summary : The summaries count for 5% of your semester grade. The more they are handed in late, the less your grade will be for this 5% of the semester.
- Assignment : You will lose 15% of your grade for each day late for homework. For example, if you hand in a homework assignment two days late and your grade is 70, you will lose 2 x 15% x 70 = 21, so you will obtain 49.
- Quizzes: Quizzes handed in late will not be graded: they will obtain a zero score.
- Final exam: Final exams handed in late will not be graded: they will obtain a zero score.

**Feedback and Grades**

I will make every effort to provide feedback and grades in one week. To keep track of your performance in the course, refer to My Grades in HuskyCT.

**Weekly Time Commitment**

You should expect to dedicate 4 to 6 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.)

**Student Authentication and Verification**

The University of Connecticut is required to verify the identity of students who participate in online courses and to establish that students who register in an online course are the same students who participate in and complete the course activities and assessments and receive academic credit. Verification and authentication of student identity in this course will include:

1. Secure access to the learning management system using your unique UConn NetID and password.
2. Video conference with ID check, etc. Refer to UConn Student Authentication Plan in the Event of Disruption for more details.

## How to Succeed in this Course

All students can succeed in this course and we are here to help you along the way. Please do not hesitate to ask questions or attend office hours. All questions are important here. Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom; I strongly encourage you to reframe challenges as an unavoidable pathway to success. At the end of each class, there is 30 minutes allocated for questions, so try to profit from it. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming. In addition to your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

Resources that may help you:

- Dean of Students Office,
- Academic Achievement Center,
- Writing Center,
- Quantitative Learning Center,
- Title IX Office,
- Student Health and Wellness -- Mental Health

## Husky Study Groups

Are you interested in forming a study group with other students in the class? There is a study group application in Nexus that can help you get started. More information can be found in this video and here for more information.

## Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the **Student Health and Wellness-Mental Health** (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university's student health insurance plan and also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the **Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor,** or contact the office at **(860) 486-4705, or https://studenthealth.uconn.edu/** for services or questions**.**

## Accommodations for Illness or Extended Absences

Please stay home if you are feeling ill and please go home if you are in class and start to feel ill. If illness prevents you from attending class, it is your responsibility to notify your instructor as soon as possible. You do not need to disclose the nature of your illness, however, you will need to work with your instructor to determine how you will complete coursework during your absence.

If life circumstances are affecting your ability to focus on courses and your UConn experience, students can email the Dean of Students at dos@uconn.edu to request support. Regional campus students should email the Student Services staff at their home campus to request support and faculty notification.

COVID-19 Specific Information: People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. These symptoms may appear 2-14 days after exposure to the virus and can include:

- Fever,
- Cough,
- Shortness of breath or difficulty breathing
- Chills
- Repeated shaking with chills
- Muscle pain
- Headache
- Sore throat
- New loss of taste or smell

Additional information including what to do if you test positive or you are informed through contract tracing that you were in contact with someone who tested positive, and answers to other important questions can be found here: https://studenthealth.uconn.edu/updates-events/coronavirus/

## Classroom/Virtual Classroom Guidelines

The class will be taught online, principally asynchronously. Videos will be posted each class where I will explain the concepts for this course. The last 45 minutes of class of Thursday sessions are mandatory study groups. You will be dispatched in small rooms with three other colleagues and you are encouraged to discuss your learning or your assignments. However, you have to complete assignments by yourselves. Most questions will be different for each student (for example, the same question will be asked but with different numbers). The quizzes and the final exam have to be done alone; you are forbidden to ask other students about the quiz.

## Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources, which include:

- The Student Code
    - Academic Integrity
    - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

## Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or http://csd.uconn.edu/.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from Blackboard's website)

## Software/Technical Requirements (with Accessibility and Privacy Information)

The software/technical requirements for this course include:

- HuskyCT/Blackboard (HuskyCT/ Blackboard Accessibility Statement, HuskyCT/ Blackboard Privacy Policy)
- Adobe Acrobat Reader (Adobe Reader Accessibility Statement, Adobe Reader Privacy Policy)
- Google drive on mobile devices or any applications or devices able to scan documents.
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- WebCam (only for the final exam)

For information on managing your privacy at the University of Connecticut, visit the University's Privacy page.

**NOTE:** This course has NOT been designed for use with mobile devices.

## Help

Technical and Academic Help provides a guide to technical and academic assistance.

This course uses the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the Help Center. You also have 24x7 Course Support including access to live chat, phone, and support documents.

## Student Technology Training

Student technology training is now available in a new HuskyCT short course created by students for students. It will prepare you to use the IT systems and services that you will use throughout your time at UConn, whether learning online or on-campus. It is available at https://lms.uconn.edu/ultra/courses/_80016_1/cl/outline .

## Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments.

- Work within two or more browser windows simultaneously.
- Open and access PDF files.
- Use HuskyCT
- Manage webcam and microphone for online meetings
- Scan and upload files

University students are expected to demonstrate competency in Computer Technology. Explore the Computer Technology Competencies page for more information..

## Evaluation of Course Experience

Students will be given an opportunity to provide feedback on their course experience and instruction using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

The University of Connecticut is dedicated to supporting and enhancing teaching effectiveness and student learning using a variety of methods. The Student Evaluation of Teaching (SET) is just one tool used to help faculty enhance their teaching. The SET is used for both formative (self-improvement) and summative (evaluation) purposes.

Additional informal formative surveys and other feedback instruments may be administered within the course.