University of Connecticut Department of Mathematics

MATH 2210Q (Section 007) Applied Linear Algebra[1]

This Version: January 16, 2022

Lecture Time:	TuTh 3:30 pm – 4:45 pm
Lecture Room:	MONT 225
Course Webpage:	HuskyCT `https://huskyct.uconn.edu/`
Webex Room:	`https://uconn-cmr.webex.com/meet/biz17006` (PIN: 4964)
Instructor:	Bin Zou
Office:	MONT 428
Office Hours:	We 11 am – 12 pm (**virtual only**), Th 2:15 pm – 3:15 pm
Q Center (Tutoring):	MoTuWeTh 1 pm – 11 pm, Fr 11 am – 3 pm, Su 3 – 11 pm
E-mail:	bin.zou@uconn.edu
Phone:	860-486-3921

Important Remarks.

- The first two weeks of classes in Spring 2022 will be **online** only; see announcement. In case of severe weather interruptions, we will also move lectures online. The online lectures will be **synchronous** using Webex during the exact assigned lecture time.
- The **preferred** format of office hours is **virtual** via Webex (see link above). Note that office hours on Wednesday morning (11 am – 12 pm) are **virtual only**. If you want to meet me in-person, simply let me know after any in-person lecture, or send me an email to schedule an appointment between 2:15 and 3:15 pm on Thursdays.
- The easiest and most convenient way to ask me questions is via email. I answer emails multiple times every day (even during weekends and holidays). It is highly suggested that you use your UConn email and put MATH 2210 in the subject line.
- Q center offers FREE drop-in tutoring services for MATH 2210Q six days a week (see above for their exact hours). Note that not all tutors are comfortable tutoring this course, so it is suggested that you check their website `http://qcenter.uits.uconn.edu/public/schedule` for tutoring schedule.
- MATH 2210Q has multiple sections in Spring 2022, and is only loosely coordinated. In particular, quiz/homework and exam, and grading components/weights vary from section to section.
- Please check the course website on HuskyCT on a **regular** basis for important announcements and course materials.

[1]Some of the information in this syllabus is copied from David Gross' previous syllabus of the same course.

1 General Course Information

Course Objective

This course is an introduction to the techniques of linear algebra with elementary applications. The objective is to learn, understand, and be able to work with the vocabulary, algorithmic manipulations, main ideas and concepts of linear algebra, including systems of linear equations, matrices, vector spaces (concrete and abstract) and their bases, linear transformations and change of bases matrices, eigenvectors and eigenvalues, orthogonalization, various matrix factorizations, and the applications of these ideas. Since this course is a bridge to more advanced courses where taking an abstract view of things becomes more important, students are expected to learn how to distinguish true statements from false ones, and to give simple explanations and counterexamples.

Course Prerequisites

The Prerequisite for this course is Calculus II, either Math 1132Q or Math 1152Q.
Note: This course is a prerequisite for Math 3210, 3510 and 3710 and is a (highly) recommended preparation course for Math 3230.

Required Textbook

Linear Algebra and Its Applications, 6th ed., by D. Lay, S. Lay and J. McDonald, Pearson.

Course Topics

Below is a **minimal** list of topics to be covered in this course:

Chapter	Title	Sections
1	Linear Equations in Linear Algebra	1.1-1.5, 1.7-1.9
2	Matrix Algebra	2.1-2.3
3	Determinants	3.1-3.3
4	Vector Spaces	4.1-4.7
5	Eigenvalues and Eigenvectors	5.1-5.4
6	Orthogonality and Least Squares	6.1-6.4

If time allows, we will also venture into some more advanced topics from the textbook, such as diagonalizing real symmetric matrices, quadratic forms, and singular value decomposition.

2 Grade Evaluation

This course has four grading components, with weights given in the following table:

Component	Quizzes	Homework	Two Midterms	Final Exam
Weight	5%	10%	25% each	35%

The schedule for letter grades will be decided once I have scores on all components. In general, 60% is guaranteed a Pass (D-) and over 90% is at least an A-.

- All quizzes and homework assignments of this course will be administrated using Pearson's MyLab Math. Below are step-by-step instructions for registering this course:
  1. Go to `https://mlm.pearson.com/enrollment/zou71572`
  2. Sign in with your Pearson student account or create your account.
  3. Select any available access option, if asked.
  (a) Enter a prepaid access code that came with your textbook or from the bookstore.
  (b) Buy instant access using a credit card or PayPal.
  (c) Select Get temporary access without payment for 14 days.
  4. Select Go to my course.
  5. Select MATH 2210Q Section 007 Spring 2022 (Instructor: Bin Zou).

  If you contact Pearson Support, give them the course ID: zou71572

- Quizzes: There will be several short quizzes (each quiz contains one or two questions, to be completed in less than 10 minutes) at the **beginning** of class at a **random** schedule throughout the semester.[2] All quizzes carry the same points and the worst performance will be dropped out in calculating grades. On average, you may expect one quiz every 1-2 week(s).

- Homework: There will be one homework assignment for each required chapter (Ch.1 to Ch.6), with a total of 6. The worst performance will be dropped out in calculating grades. So among the best 5, each accounts for 2% towards your course score.

- Exams: All exams are closed-book and closed-notes. No electronic devices are allowed, except for a calculator (see below for policy). The **tentative** plans are as follows:
  (1) Midterm Exam 1 covers Chapter 1 and Chapter 2, planed on February 10 in class.
  (2) Midterm Exam 2 covers Chapter 3 and Chapter 4, planed on March 10 in class.
  (3) Final Exam covers **all** chapters, scheduled by Registry Office (Week of May 2-7).

  Notice will be given one week in advance before two midterm exams.

Make-Up Policy

There is **no** make-up for any missing quiz or homework. If you are able to provide proof of officially acceptable reasons (e.g. a verifiable medical excuse), I will redistribute the weight of that missing quiz (homework) to other quizzes (homework).

A make-up exam will only be granted under very convincing proof, and may be dramatically different from the regular exam. Please communicate with me ASAP if you know you will miss an exam.

Please avoid making travel arrangements that would not allow you to take the final during the Week of May 2-7. All rescheduled final exams must be approved by the Dean of Students Office and they do not easily allow rescheduling. Please note that they do NOT consider vacations, previously purchased tickets or reservations, graduations, social events, misreading the assigned final exam schedule, and oversleeping as viable excuses for missing a final exam

[2] Quiz 1 is an exception, and is assigned for you to familiarize yourself with MyLab Math.

either. If you think that your situation warrants permission to reschedule, please contact the Dean of Students Office to meet with a staff member as soon as possible.

Calculator Policy

Only numeric and/or graphing calculators that do not have a C.A.S., i.e, cannot do symbolic manipulations, are allowed for quizzes and exams. If you want to use a calculator, I recommend any version of the TI-83 or TI-84.

Academic Integrity

I expect all of you to be familiar with and abide by UConn's academic integrity policy at all times; see HERE for details. If you discuss homework questions with your classmates, you must work out your own solutions individually and independently. There should be no help given or received on in-class quizzes and exams. Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, examinations and assessments - whether online or in class); presenting, as one's own, the ideas, words or calculations of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated; using unauthorized aids in preparing work for evaluation; and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved. A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in Appendix A of the Student Code. Sanctions shall include, but are not limited to, a letter sent to the Office of Community Standards of the University; a grade of 0 on the assignment, quiz or exam; a grade of F for the course.

3 Other

Course Feedback

Your feedback on the course is always welcome and appreciated, and will be awarded as part of the course participation. If you have any comments or suggestions that may help improve the lecture quality and learning outcome, please do not hesitate to contact me.

Accessibility

In compliance with University of Connecticut policy and equal access laws, I am available to discuss appropriate accommodations that you may require as a student with a disability. Please consult the Center for Students with Disabilities, see `http://csd.uconn.edu/`.

COVID Related Policies and Guidelines

The most important and trusted source on COVID related policies and guidelines is:
`https://covid.uconn.edu/campus-guidelines/`