

MA322-005: Matrix Algebra and its Applications

MWF 12:00-12:50 PM

Spring 2023

Instructor: Michael Morrow

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Office hours: M: 1:00-2:00pm (Mathskeller), WF: 1:00-2:00pm (POT 722)

Classroom: CB 335.

Course description: Algebra of matrices, elementary theory of vector spaces and inner product spaces, the solution of simultaneous linear equations using Gaussian elimination and triangular factorization. Orthogonal projections, pseudo inverse and singular value decomposition, least squares approximation. Determinants, eigenvalues and eigenvectors, diagonalization.

Prerequisites: MA114.

Textbook: *Linear Algebra and its Applications* by David C. Lay, Steven R. Lay, and Judi J. McDonald. We will cover topics from Chapters 1-6, including: solving systems of linear equations/matrix operations/determinants/vector spaces and linear maps/linear independence/basis and dimension of a vector space/eigenvalues and eigenvectors/orthogonality.

Grades: There will be four elements to assessment and grading in this course: WebWork, Written homework, quizzes, and three Tests.

Participation: You must be present and engaged in class each day.

Online homework: We will use WebWork for homework, which can be accessed through Canvas. The WebWork assignments close at 11:59 PM on the due date listed in the course calendar, and answers will appear two days later. You should expect on average three WebWork assignments per week.

Written homework: In most weeks written homework will be assigned and is due on Wednesdays at 11:59 PM (see course calendar). In order to receive credit, solutions must be written out neatly (or typed) and uploaded as a single PDF file to canvas. You may write your solutions on a tablet and upload directly from there, or you may write your solutions on paper and upload a scanned version. Your scan should show just the paper but not the table surface or any accessories. The homework papers must be neatly aligned in the scan and not be blurry. You *may* work on written homework together, as long as you submit your own original work. Late submissions will not be accepted unless the delay is due to an excused absence. Solutions for the written homework assignments will typically show up on Canvas a couple days later.

Quizzes: There will be a weekly 15 minute quiz on Fridays, except for exam weeks (see the course calendar). The quizzes will be administered through Canvas and will involve true/false questions, multiple choice questions, and questions where you have to enter a numerical answer. The quizzes will be available between 2:00 PM and 8:00 PM, and they will close 15 minutes after you opened them (8:00 PM at the latest). Each quiz is worth 4 points. Your lowest quiz score will be dropped. A missed quiz due to an unexcused absence counts as your lowest quiz grade. You *may not* work on the quizzes together.

Exams: There will be 2 midterm exams and a final exam. Before each exam there will be a review session. The exams will be given in class and you will write your answers on paper, which you will turn in before the end of class. The final exam is cumulative. The exam dates are as follows:

Exam 1	Exam 2	Final Exam
Wed, Feb 22	Wed, Apr 05	Wed, May 03 (1:00-3:00pm)

If there are any conflicts with the exam schedule please inform me as soon as possible. **Calculators are not allowed on the exams!**

Course grades: Your course grade will be determined by your grades on WebWork, written homework, quizzes, and exams. There are 500 points in total for this course. The breakdown is as follows:

- WebWork: 80 points
- Written homework: 80 points
- Quizzes: 40 points
- Exams: 100 points each

Your grade will be based on the total number of points you earned according to the following:

At least 440	At least 390	At least 340	At least 290
A	B	C	D

Policies: The following UK Regulations apply to this course. Please read them carefully, in particular the sections on Excused Absences, Plagiarism & Cheating, and on Course Material Copyrights. In short they say: cheating and plagiarism are serious breaches of academic conduct, and all course material is my intellectual property.

- [UK Academic Policies](#)
- [Academic Offense Rules](#)
- [Statement on Diversity, Equity, and Inclusion](#)
- [Classroom Recordings and Copyright](#)

Inclement weather policy: The University of Kentucky Severe Weather Policy can be found at http://www.uky.edu/PR/News/severe_weather.htm. The UK Infoline at (859) 257-5684 or the UK Web site at www.uky.edu are the best places to find the most up-to-date situation. If you feel that travel during inclement weather would be hazardous, then try to inform your instructor as soon as safely possible. You will be given the opportunity to make up any work missed or due on that day. As always, each student is responsible for any work missed and will be expected to get the notes from another student or from the web.