

MA 322 - 003 – Matrix Algebra

Fall 2026

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Course Website: www.ms.uky.edu/~kate/teaching/f26_322.html.

Office Hours Office hours will be an important resource for this class. Office hours are when you can drop by without an appointment. (If none of these times work for you send me an email and we can look for another option.)

Meeting information and expectations You are expected to attend all class meetings and to participate actively. I will start class promptly, so please be in your seat ready to begin before classtime starts.

When you come to class each day, you should bring a notebook or note-taking app to use. Working on outside tasks or assignments for other classes is not appropriate during our classtime.

To succeed in this class, you are expected to work on class material for about 6 hours a week outside of class time. You should spend that time reviewing class notes, reading the textbook, completing homework assignments, studying for assessments, and seeking help for any questions you have. It is very helpful to form a study group with whom to work and receive help, and work on class material consistently throughout the week, not just cramming as due dates approach.

If you will be absent for a class trip, religious holiday, or something similar, please let me know at least a week in advance and provide appropriate documentation. (Such as a letter from your other instructor.) For more details please see the ombud's website here: <https://ombud.uky.edu/students/academic-policies/absences>.

Course description and learning objectives 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.

The main goal of this class is to practice problem-solving and critical thinking. You will practice converting a real-world problem into a mathematical equation and interpreting the solution to that equation in the context of the real-world problem. From this course you will ideally gain stronger problem-solving skills, more mathematical resilience, and better technical communication.

Required materials and technology The textbooks for this course is Linear Algebra with Applications by W. Keith Nicholson, which you can find here: <https://openlibrary-repo.ecampusontario.ca/jspui/handle/123456789/897>.

I recommend you read along and I will list the section that corresponds to each class on the course website.

Our online homework system is called WeBWorK. It is free to use, and an account has already been set up for you. To access WeBWorK, you *must* use the link attached to the homework assignment on Canvas. If you are inactive too long on WeBWorK, you will get logged out and will need to sign back in by navigating through Canvas again.

Prerequisites MA 114 Calculus II.

Assignments and Grading

Homework is worth 10% of your grade. Your homework will be completed and submitted via WeBWorK. You are encouraged to work together on the homework. It is your responsibility though to make sure you are learning the material and not relying too heavily on others.

Late homework will only be accepted with an excused absence.

Quizzes are worth 35% of your grade. There will be quizzes most weeks when we are not having an exam. They will take place during class time, for approximately 20 minutes. Quizzes will be taken individually, without the use of outside resources. Calculators will **not** be permitted, nor will they be necessary to solve the problems.

Exams are worth 55% of your grade. There will be two midterm exams during the semester, on **September 30 and November 11**. Exams will take place during class time, for 50 minutes. There will also be a cumulative final exam during finals week on **Wednesday, December 16 1:00 - 3:00 PM**. Like quizzes, exams will be taken individually without use of calculators or outside resources. Each midsemester exam is worth 15% of your grade. The final exam is 25%.

Your overall letter grade in the class will be based on the following standard breakdown:

percentage	letter grade
90.00 and above	A
80.00 – 89.99	B
70.00 – 79.99	C
60.00 – 69.99	D
59.99 and below	E

You can find the academic calendar here: <https://registrar.uky.edu/sites/default/files/2025-10/university-calendar-academic-year-26-27-final.pdf>.

Inclusivity and Disability Help Every student deserves to learn and participate in a classroom that is respectful and supportive. I commit to fostering such an environment for students of all identities, backgrounds, and abilities. Likewise, I expect each of you in this class to act with respect and support toward each other. If at any point you feel unwelcome or uncomfortable in this class, please reach out to me.

I aim to make this class accessible to all students. If you have trouble accessing, viewing, hearing, or responding to any of our class resources, please tell me so I can help you with them. You may seek disability support and documentation from UK's Disability Resource Center: <https://www.uky.edu/DisabilityResourceCenter/>. If you require classroom or testing accommodations (e.g. a scribe, extended time on exams, etc.), please send me your DRC accommodation letter at least one week ahead of the first assignment you need it for.

University policies

- (1) **Academic policies:** This class will adhere to all of UK's official academic policies, which you can find here: <https://ombud.uky.edu/students/academic-policies>
- (2) **Integrity, Cheating and Plagiarism:** We will follow the Provost's office policies which you can find here: <https://provost.uky.edu/proposals/guidance-course-proposals/academic-offenses>

You are expected to maintain academic honesty in this course. You may work together on homework assignments, but the final submitted work must be your own. Quizzes and exams are individual assignments, and unless otherwise stated, you may not use any outside resources on these assessments. You may not discuss quiz or exam problems with other students who have not already taken the assessment yet. Remember, giving information about an assignment is considered cheating in

the same way that receiving information is cheating. If you are unsure whether you are allowed to work with another person or use a certain resources on an assignment, please ask me!

Student Support The University of Kentucky has resources to enhance your well-being and mental health. Visit <https://studentsuccess.uky.edu/well-being> to see a list of services. Most are covered by student fees though you should consult with each website. These services may include:

- (TRACS) Triage, Referral, Assistance and Crisis Support to talk to a clinician for mental health support and referral. For further information, visit <https://studentsuccess.uky.edu/tracs>
- The Center for Student Support and Intervention (CSI) for someone to guide you through campus resources and/or if you need an explanation for an extended absence. For further information, please visit the site <https://studentsuccess.uky.edu/center-support-and-intervention>
- University Health Services (UHS) for managing primary physical care and other medical issues See their website to determine if UHS is best for your needs and schedule appointments. For further information, please visit the site <https://ukhealthcare.uky.edu/university-health-service>
- University Behavioral Health (UBH) for managing psychiatric conditions, diagnostic testing, and medication management. For further information, visit the site UHS Mental Health — UK Healthcare.
- The Disability Resource Center (DRC) for accommodation requests, based on diagnosed disabilities. See <https://studentsuccess.uky.edu/disability-resource-center>
- The Collegiate Recovery Program, for people in or exploring recovery from addiction. Please see: <https://studentsuccess.uky.edu/power/services/collegiate-recovery-program>

Please consider opportunities to use these services that do not conflict with your course attendance. If there are extenuating circumstances that you would like to discuss, please contact me by e-mail.

For further information, please see:

- UK Academic Policy Statements
- UK Mental Health Resources
- UK Academic Support
- UK Academic Ombud

AI course policy Idea generation, analytical thinking, and critical analysis are key outcomes in this course. As a result, all assignments submitted by the student must be 100% their original work. Generative AI tools should not be used for any stage of any assignment or activity – this includes brainstorming, fact checking, or grammar correction. Any submission of AI-generated content will be considered misuse in the context of this course.

Classroom Emergency Preparedness and Response Information Please go to here and look under “Classroom Emergency Preparedness and Response Information” for instructions and further information.

Course Copyright All original instructor-provided content for this course, which may include handouts, assignments and lectures, is the intellectual property of the instructor(s). Students enrolled in the course this academic term may use the original instructor-provided content for their learning and completion of course requirements this term, but such content must not be reproduced or sold. Students enrolled in the course this academic term are hereby granted permission to use

original instructor-provided content for reasonable educational and professional purposes extending beyond this course and term, such as studying for a comprehensive or qualifying examination in a degree program, preparing for a professional or certification examination or to assist in fulfilling responsibilities at a job or internship; other uses of original instructor-provided content require written permission from the instructor(s) in advance.