# MATRIX METHODS

MATH 3203.001 MATH 3203.002
FALL 2025
Class information is color coded.

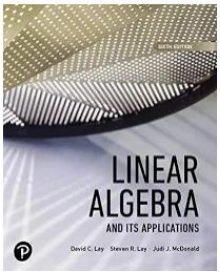
**Instructor**: Dr. Deborah Koslover
**Office**: RBN 4010
**Email**: dkoslover@uttyler.edu
**Classroom**: **RBN 2010**, **RBS 2024**
**Meeting Time**: **MW 10:10 – 11:05 AM**
**MW 1:25 – 2:20 PM**
**Office Hours**: MW 11:15 AM – 12:15 PM, TTh 1 – 2 PM, F 1:20 – 2:20 PM or by appointment.

## Course Description

This is a class in which the answers barely matter, at least on tests and quizzes. "How can that be?" you might ask. "Isn't math all about finding solutions to problems?" Generally, you would be correct, but notice the title of the course, Matrix **Methods**. The point of this course is to learn new methods that can be used to solve very difficult problems, problems where the methods you already know don't work or are overly cumbersome. However, we don't want to apply the methods to difficult problems. This would take time from learning new methods and it would make tests very difficult. Instead, we will apply these methods to easy problems; often problems which you already can solve. However, the point of tests and quizzes will be to determine whether you can apply the methods, not solve the problems. You will be graded on whether you apply the methods correctly. The correct answer will be worth very little. Methods not taught in this class will be worth nothing, even if the answers are correct!

The main topics we will cover are matrices and matrix algebra, determinants, systems of linear equations, elimination, eigenvalues and eigenvectors, linear transformation, and applications in science and engineering. This course has a prerequisite of MATH 2413.

## Textbook




Linear Algebra and its Applications, 6th Edition by Lay, Lay, McDonald, Pearson 2012, ISBN-13: 978-0-13-585125-8, ISBN-10: 0-13-585125-4 or ebook 978-0-13-585121-0

## Website


You will be using Canvas. Go to www.uttyler.edu/canvas to log into Canvas using your regular patriots account. If you have enrolled in the course, you should have access to the website. You will find important documents, grades, lecture notes, and announcements on Canvas.

*Attendance is mandatory and attendance records will be kept. Notify Dr. Koslover in advance if you must miss a class, be late for a class or leave early. (Official University Policy: Class attendance is the responsibility of the student. When a student has a legitimate absence, the instructor may permit the student to complete missed assignments. In many cases class participation is a significant measure of performance, and non-attendance may adversely affect a student's grade. When a student's absences become excessive, the instructor may recommend that the student initiate a withdrawal.)*

# Learning Outcomes

At the conclusion of this course, you will be able to

1. Perform basic matrix operations including row reduction, transpose, finding the inverse and finding the determinant.

2. Solve systems of linear equations using substitution, Gaussian elimination, Cramer's rule and inverse matrices.

3. Find eigenvalues and eigenvectors and use them to diagonalize matrices and solve problems of matrix calculus.

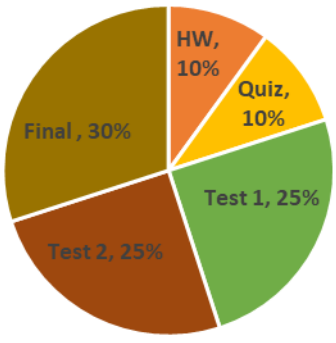
4. Understand the basic properties of Euclidean space including linear independence, dimension, rank, orthogonality, norm and projection.

# Course Evaluation

At the end of the semester, you will find your final grade on my.uttyler.edu. It will also be posted on Canvas.
A final course grade of

90% is guaranteed to be at least an A
80% is guaranteed to be at least a B
70% is guaranteed to be at least a C
60% is guaranteed to be at least a D.

All grades below 60% will be F.



# The Plan


**(10%)**: Homework will be assigned each class period via the online platform WebWork. You can access the homework assignments at the following link https://webwork-hosting.runestone.academy/webwork2/uttyler-koslover-math3202 Your WebWork username will bd emailed to you. Your temporary WebWork password is uttyler. Please change the password immediately upon logging into WebWork for the first time. The login is case sensitive. For example, if your username and password are Lead and uttyler, you will not be able to successfully login if you type lead and UTTyler.

In general, a new homework assignment will become available on WebWork after each class. It will be due Tuesday night (by 5AM Wednesday morning) of the following week. The WebWork system provides you with instant feedback on your answers, as well as three attempts to complete most problems. You should use this to your advantage. However, you will not be able to submit solutions after the due date. When computing your final homework grade, I will use your total score on all the WebWork problems. For example, if there are a total of 150 points throughout the semester, and you successfully complete 120 of them, your homework grade will be 80%. Please let me know as soon as possible if you suspect a problem with WebWork.

On occasion, an on-paper problem may be assigned. They will need to be scanned and posted on Canvas in pdf format only!

Please note that Webworks is a national program. If you just search for it on the internet, you will end up at a website for some other university and that's why you won't be able to login.

*Striving for success without hard work is like trying to harvest where you haven't planted.* _David Bly


**(10%)**: Quizzes will be given on three Wednesdays at the end of class. These will be short quizzes to test for basic understanding. See the list of important dates below for quiz dates. No quizzes will be dropped. No make-ups will be given except as noted below.

*It's not that I'm so smart, it's just that I stay with problems longer.* _Albert Einstein

**TESTS (25% each) and FINAL EXAM (30%):** These exams will test your knowledge of the theory and application of matrix methods. See the list of important dates below for test dates and final exam date and time. You must take the final exam on the date given. Do not plan your summer vacation to start early. No tests will be dropped

*Success is dependent on effort.* _Sophocles


**Final Exam**: 10:10 Class – Wednesday, Dec. 10, 10:15 AM – 12:15 PM
1: 25 Class – Monday, Dec 8, 12:30 – 2:30 PM

# Make-ups


Make-ups for **documented** absences that are **required** as part of a UT Tyler obligation (e.g. athletes participating in an event, participating in a debate contest, etc.) or for religious observation will be granted. For all make-ups of this type, prior notification of at least one week and documentation are required. Other make-ups are granted only in extreme cases such as hospitalization and at the sole discretion of the instructor.

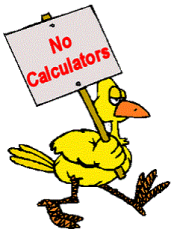
Make-ups will be allowed for the following excused absences.
1) Illnesses, with a doctor's note, no exceptions.
2) Your child's illness, with a doctor's note.
3) Court appearances, including citizenship court, with documentation
4) Weddings or military advancement with documentation **and** a photograph showing that you attended the event. Funerals with documentation.

Doctor's notes must be dated either before you miss the class or within 2 days after you missed the class, unless you or your child are hospitalized. In case of hospitalization, bring evidence of hospitalization.

Make-ups for tests must be taken within 3 days after returning to class except for lengthy illnesses or hospitalizations.

# Other Details

**Calculator Policy**: No calculators will be allowed on quizzes and tests.




**Cell phones, IPODs and other electronic devices**: Please set your cell phones to silent mode. If you are expecting an emergency call, please notify the professor in advance, sit near the door, and answer the phone outside. You will not be allowed to wear an IPOD or other electronic devices (except hearing aids) during an exam. During tests, cell phones must be turned off and placed in sight on your desk.

**AI: AI is not permitted in this course at all**.: I expect that all work submitted by students for this course to be their own. I have carefully designed all assignments and class activities to support your learning. Doing your own work, without human or artificial intelligence assistance, is best for your efforts in mastering course learning objectives. For this course, I expressly forbid using ChatGPT or any other artificial intelligence (AI) tools for any stages of the work process, including brainstorming. Deviations from these guidelines will be considered a violation of UT Tyler's Honor Code and academic honesty values.

# Calendar

AUGUST

| MON | WED | FRI |
|---|---|---|
| 25 | 27 | 29 |
| First Day | | |

SEPTEMBER

| MON | WED | FRI |
|---|---|---|
| 1 | 3 | 5 |
| Labor Day | | |
| 8 | 10 | 12 |
| Census date | Quiz 1 | |
| 15 | 17 | 19 |
| | | |
| 22 | 24 | 26 |
| | Test 1 | |
| 29 | | |
| | | |

OCTOBER

| MON | WED | FRI |
|---|---|---|
| | 1 | 3 |
| | | |
| 6 | 8 | 10 |
| | | |
| 13 | 15 | 17 |
| | Quiz 2 | |
| 20 | 22 | 24 |
| | | |
| 27 | 29 | 31 |
| | Test 2 | |

NOVEMBER

| MON | WED | FRI |
|---|---|---|
| 3 | 5 | 7 |
| Drop Day* | | |
| 10 | 12 | 14 |
| | | |
| 16 | 19 | 21 |
| | | |
| 24 | 26 | 28 |
| Thanksgiving Holiday | | |

DECEMBER

| | | |
|---|---|---|
| 1 | 3 | 5 |
| | | |
| 8 | 10 | 12 |
| Final Exam | Final Exam | |

* Last day to drop and receive a W.