Math 3203.001 - Matrix Methods in Science and Engineering

Spring 2024
MW 9:05 - 10:00 am in RBN 4034

Instructor:	Dr. Maddie Dawsey
Office:	RBN 4048
Office Hours:	Mo 2:30 - 3:30 pm, Tu 9:00 - 10:00 am, Fr 9:00 - 10:00 am
Email:	mdawsey@uttyler.edu
Website:	All course materials will be posted on Canvas

Required Textbook

Linear Algebra and Its Applications, 5th edition, by Lay, Lay, and McDonald, ISBN #9780321982612.

Course Description

Matrices and matrix algebra, determinants, systems of linear equations, Gaussian elimination, eigenvalues and eigenvectors, linear transformation, and applications in science and engineering.
The prerequisite for the course is Math 2413 Calculus I.

Student Learning Outcomes

Upon completion of this course, students should be able to do the following:

- Perform basic computations with matrices, including Gaussian elimination, matrix multiplication, and computing transposes, inverses, and determinants
- Solve systems of linear equations using Gaussian elimination and inverse matrices
- Compute eigenvalues and eigenvectors of matrices and under- stand their importance to matrix theory and its applications
- Apply matrix techniques to real world applications from science and engineering

Important Dates

January 15th	Martin Luther King, Jr. Holiday
January 29th	Census Date
March 11th - 15th	Spring Break
March 25th	Withdrawal Deadline
April 29th - May 3rd	Final Exams

Grading Scheme

Your final letter grade will be determined by the following grading scheme:

Homework	**20%**
Quizzes	**10%**
Midterm Exams	**20% each**
Final Exam	**30%**

A	90 - 100
B	80 - 89.99
C	70 - 79.99
D	60 - 69.99
F	0 - 59.99

Attendance

Students are expected to attend every lecture in person and are responsible for any announcements made during lecture.

Homework (20%)
Homework will be assigned and posted on Canvas after each class. Homework will be submitted on Canvas once each week, by the beginning of class each Monday, unless otherwise stated by the professor. Late homework will not be graded and will receive a score of zero. Your lowest two homework scores will be dropped at the end of the semester. Please see the course Canvas page for the academic dishonesty policy.

Quizzes (10%)
There will be 10 quizzes. Quizzes will be at the beginning of class each Wednesday, except on exam weeks, starting on Wednesday, January 24th. Quizzes will be approximately 5 minutes long. Your lowest quiz grade will be dropped at the end of the semester.

Make-up quizzes for documented absences that are required as part of a UT Tyler obligation (e.g. collegiate athletes participating in an event, etc.) or for religious observation will be granted. For all make-ups of this type, prior notification and documentation are required. Other make-ups will be granted only in extreme cases and at the sole discretion of the professor. Missed quizzes that are not made up before the following class will receive a score of zero.

Exams (40%)
There will be two midterm exams. Each midterm exam will be worth 20% of the final course grade. The tentative exam schedule is:

Exam 1	**Wednesday, February 28th**
Exam 2	**Wednesday, April 17th**

Make-up exams for documented absences that are required as part of a UT Tyler obligation (e.g. collegiate athletes participating in an event, etc.) or for religious observation will be granted. For all make-ups of this type, prior notification and documentation are required. Other make-ups will be granted only in extreme cases and at the sole discretion of the professor. Missed exams that are not made up within three days will earn a grade of zero.

Final Exam (30%)
The final exam will be Monday, April 29th at 8:00 - 10:00 am in our usual classroom. The final exam will be cumulative.

Technology
Students will be required to have a device capable of internet access and access to Canvas. The use of calculators and other electronic devices, including cell phones, is not permitted during exams.

Student Resources
The Mathematics Learning Center (MLC), RBN 4021, is an open access computer lab for math students. There are tutors on duty for several hours each day to assist students who are enrolled in early-career courses. While there are no tutors specifically for MATH 3203, the tutors on duty may be able to help you. See https://www.uttyler.edu/math/mlc.php and click the link to the MLC's Canvas page to see the online tutoring schedule.

Students are encouraged to set up study groups to study and work on homework together, but each student must submit their own individual homework.

Other resources available to you include your textbook and your professor (in office hours or via email).

University Policies
For university policies concerning Students' Rights and Responsibilities, Grade Replacement/Forgiveness, State-Mandated Course Drop Policy, Disability Services, Student Absence due to Religious Observance, Student Absence for University-Sponsored Events and Activities, Campus Carry, Social Security and FERPA Statement, please see the University Information module on the course Canvas page.

Tentative Schedule

WEEK	DAY	PLANNED MATERIAL
Week 1 1/15–1/19	Monday	Martin Luther King, Jr. Holiday
	Wednesday	Section 1.1
Week 2 1/22–1/26	Monday	Section 1.2
	Wednesday	**Quiz 1**, Finish Section 1.2
Week 3 1/29–2/2	Monday	Section 1.3
	Wednesday	**Quiz 2**, Section 1.4
Week 4 2/5–2/9	Monday	Section 1.5
	Wednesday	**Quiz 3**, Finish Section 1.5
Week 5 2/12–2/16	Monday	Section 1.7
	Wednesday	**Quiz 4**, Section 1.8
Week 6 2/19–2/23	Monday	Section 1.9
	Wednesday	**Quiz 5**, Finish Section 1.9
Week 7 2/26–3/1	Monday	Section 1.6
	Wednesday	**Exam 1 (Chapter 1)**
Week 8 3/4–3/8	Monday	Section 2.1
	Wednesday	**Quiz 6**, Section 2.2
Week 9 3/11–3/15	Monday	*Spring Break*
	Wednesday	*Spring Break*
Week 10 3/18–3/22	Monday	Section 2.3
	Wednesday	**Quiz 7**, Section 2.8
Week 11 3/25–3/29	Monday	Sections 2.9, 2.6
	Wednesday	**Quiz 8**, Section 3.1
Week 12 4/1–4/5	Monday	Section 3.2
	Wednesday	**Quiz 9**, Section 3.3
Week 13 4/8–4/12	Monday	Section 5.1
	Wednesday	**Quiz 10**, Section 5.2
Week 14 4/15–4/19	Monday	Section 5.3
	Wednesday	**Exam 2 (Chapters 2-3 and Sections 5.1-5.2)**
Week 15 4/22–4/26	Monday	Finish Section 5.3
	Wednesday	Section 5.5
Week 16		Cumulative Final Exam