MATH 203 - DL1, Fall 2022

LINEAR ALGEBRA

ONLINE LECTURES

Instructor: Sarah Khankan, Ph.D.

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Office: Exploratory Hall Room 4417
Office Hours: W 1:30 pm - 2:30 pm or by appointment (in office).
Online office hours: M W 10:00 am - 11:00 am on Blackboard Collaborate.

Credit Hours: 3

Text(s): Linear Algebra and Its Applications, by David C. Lay, *6th Edition*, Pearson

Prerequisites: Math 114 - Analytic Geometry and Calculus II

Broad purpose of the course: Systems of linear equations, linear independence, linear transformations, inverse of a matrix, determinants, vector spaces, eigenvalues, eigenvectors, and orthogonalization.

Disability statement: If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Resources at 703.993.2474. All academic accommodations must be arranged through that office.

Online Exams:

- Exam 1: 09/23 - 9/24, multiple time options provided
- Exam 2: 10/28 - 10/29, multiple time options provided
- Final Exam: 12/09/2022 - 12/10/2022, multiple time options provided

Grade Distribution: Final grades are converted to letter grades using the automated Blackboard letter grade conversion

Quizzes	25%
Exam 1	25%
Exam 2	25%
Final Exam	25%

Homework: Homework will be assigned for each chapter. Completing the homework assignment is the minimum of work you should be doing outside of class. Homework will not be collected, but completing it is essential to passing the course. **Reading the sections of the text related to the problems will always be part of the homework assignment**. I will start the lecture assuming you read the corresponding sections before class.

Quizzes: Quizzes are scheduled every other week ON-CAMPUS on Mondays and Tuesdays. You can find a detailed quiz and exam schedule on the last page of this syllabus.

Course Policies:

- Lectures will be recorded and posted on Blackboard twice weekly as a series of videos. Students are expected to watch the videos the same day they are made available and prepare any questions for the office hours.
- A PDF document of each lecture will also be posted on Blackboard.
- A solving session and solutions to some practice problems will be posted.
- No makeup exams/quizzes will be given.
- Students are responsible for all missed work, regardless of the reason for absence. All class related notes will be posted on Blackboard.
- Doing well in this class implies: watching all the lectures, repeating the examples we solve in class and during the recorded solving sessions, working on the assigned problems from each section and reaching out for help as soon as you need it.

How to get help in this class:

- Course inctructor: join my in-person and online office hours. You can reach me via email; you should receive an email back from me typically within 24 hours. I try not to check my email during the weekend.
- Math Tutoring Center: The Math Tutoring Center will be offering online tutoring services to students currently enrolled in undergraduate Math courses at GMU. For hours and more info: https://science.gmu.edu/academics/departments-units/mathematical-sciences/math-tutoring/tutoring-center-hours-and

Tentative Course Outline:
The weekly coverage might change as it depends on the progress of the class.

Week	Content	Sections covered
1 (week of 08/22)	• Systems of Linear Equations • Row Reduction and Echelon Form	1.1, 1.2
2 (week of 08/29)	• Vector Equations • The Matrix Equation Ax=b • Solutions Sets of Linear Systems	1.3, 1.4, 1.5
3 (week of 09/05)	• Labor Day • Linear Independence	1.7
4 (week of 09/12)	• Introduction to Linear Transformations • The Matrix of a Linear Transformation	1.8, 1.9
5 (week of 09/19)	• Matrix Operations • The Inverse of a Matrix • EXAM 1 on Campus: multiple sessions on Friday 09/23 and Saturday 09/24	2.1, 2.2
6 (week of 09/26)	• Characterizations of Invertible Matrices	2.3
7 week of 10/03)	• Introduction to Determinants • Properties of Determinants • Vector Spaces and Subspaces	3.1, 3.2, 4.1
8 (week of 10/10)	• Null Spaces, Column Spaces, and Linear Transformations • Linearly Independent Sets; Bases	4.2, 4.3
9 (week of 10/17)	• Coordinate Systems • The Dimension of a Vector Space	4.4, 4.5
10 (week of 10/24)	• Change of Basis • EXAM 2 on Campus: multiple sessions on Friday 10/28 and Saturday 10/29	4.6
11 (week of 10/31)	• Eigenvectors and Eigenvalues	5.1
12 (week 11/07)	• The Characteristic Equation • Diagonalization	5.2, 5.3
13 (week 11/14)	• Inner Product, Lenth, and Orthogonality	6.1
14 (week of 11/21)	• Orthogonal Sets • Thanksgiving break	6.2
15 (week of 11/28)	• Orthogonal Projections	6.3

Assessment	**Material covered**	**Date**
Quiz 1	1.1, 1.2, 1.3, 1.4, 1.5	9/6 - 9/7
Quiz 2	1.7, 1.8, 1.9	9/19 - 9/20
EXAM 1	1.1, 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 2.1	9/23 - 9/24
Quiz 3	2.2, 2.3, 3.1, 3.2, 4.1	10/10 - 10/11
EXAM 2	2.2, 2.3, 3.1, 3.2, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6	10/28 - 10/29
Quiz 4	5.1, 5.2, 5.3	11/14 - 11/15
Quiz 5	6.1, 6.2, 6.3	11/28 - 11/29
FINAL EXAM	5.1, 5.2, 5.3, 6.1, 6.2, 6.3	12/09 - 12/10