Fall 2019 MATE 203 Linear Algebra I

Instructor: Dr. Elçin Emre-Akdoğan	**Place:** A116
Office Hours: by appointment	**Textbook:** Kolman, B. & Hill, D. R., Elementary Linear Algebra with Applications (9th Edition), 2007
Office: G104	
Email: elcin.akdogan@tedu.edu.tr	**Time:** Wednesday 10:00-12:00

Course Description: This linear algebra course covers basic concepts of linear algebra, matrix, determinant, linear equations. Topics include:

- Matrices
- Matrix multiplication
- Algebraic properties of matrix operations
- Special types of matrices and partitioned matrices
- Solving linear systems
- Echelon form of a matrix
- Solving linear systems
- Elementary matrices; finding A^{-1}
- Properties of Determinants
- Cofactor Expansion
- Inverse of a Matrix
- Other applications of Determinant

Course objectives:
The aim of this course is to provide student fundamental understanding of matrices, determinants, their types and properties. In addition to this, students will learn several methods of solving systems of linear equations.

Learning Outcomes:
Upon successful completion of this course, the student should be able to:

- Calculate matrices of linear equations.
- Derive the inverse of a given matrix.
- Calculate determinants of linear equations.
- Identify the properties of determinant function.
- Apply the methods of solving systems of linear equations.

Methods for Assessment of Learning Outcomes: The expected learning outcomes for the course will be assessed through graded activities and ungraded activities. The graded activities include exams, homework, and quiz. The ungraded activities will be used to monitor your progress. A variety of these ungraded assessment techniques may be employed, including problems to be completed during class, direct questioning of students, answering students questions in class, and discussions during office hours.

Attendance: This course requires strong involvement and attendance. You are responsible for all information given out during the courses. Exceeding 20% of attendance with unexcused absences will result a half letter grade reduction. You are expected to arrive on time for the lectures.

Communication: All announcements will be sent to your e-mail address through Moodle. Check your e-mails regularly in order to be informed.

Grades: Your final grade will be weighted as follows:

25%	Homework	Details will be given during the course
15%	Quizzes	Details will be given during the course
25%	Midterm Exam	Date and Location To Be Announced
35%	Final Exam	Date and Location To Be Announced

Homework: As in all mathematics courses, working on problems is the key to success. It is also vital to work on problems on a regular basis. Each assignment will be due at the **beginning** of the following class.

Homework Exercises will be from the textbook. One exercise will be chosen at random from each assignment and graded on a scale of 0-10.

Solutions to homework exercises will be posted after the class during which they have been collected.

Late Homework Policy:

Homework is due at the **beginning** of class.
Examples:

- If you are not in class when homework is collected, your homework will be considered late.
  This includes lateness due to oversleeping, traffic, and parking availability.
- If you pass homework in at the end of class on the day it is due, it will be considered late.
- If you can not make it to class, **you are responsible** for turning in the assignment early or finding someone to drop it off in class for you.
- Only under severe circumstances will late homework be accepted for full credit, for example, involvement in a traffic accident, or illness requiring medical attention.

Late homework **will** be accepted at any time, subject to the following conditions:

- The word "LATE" must be written at the top of the assignment.
- Only half credit will be awarded, solely based on effort.

Academic Honesty: It hardly needs to be said that such things as plagiarism or stealing another student's work are unacceptable. However, in this class, it is entirely proper to work in teams to do discussion on the problems or the problem solving, as long as you yourself have mastery of those answers and are prepared on your own to present them in class. Plagiarism is a serious breach of academic trust. In academic work, our words and ideas are the value of our work, so turning in someone else's work as if it were your own is a form of theft. When you use someone else's words and ideas--whether it's the work of a famous writer or a fellow student--without crediting the source or authorship of those words and ideas, you are plagiarizing. So here's the bottom line: original work only, credit to ideas, writing, or words from someone other than you.

SCHEDULE

Date	Topic	Content	Next lesson
Week 1 Session 1 (25/09/2019)	Chapter 1. Linear Equations and Matrices	Introduction 1.1. Systems of Linear Equations	*No assignment
Week 2 Session 1 (02/10/2019)	Chapter 1. Linear Equations and Matrices	1.2. Matrices https://courses.lumenlearning.com/wmopen-collegealgebra/chapter/introduction-systems-of-linear-equations-three-variables/ https://www.geogebra.org/m/PNUefxFh#material/egShcRdX	*No assignment
Week 3 Session 3 (09/10/2019)	Chapter 1. Linear Equations and Matrices	1.3. Matrix Multiplication	*Homework assignment from textbook
Week 4 Session 1 (16/10/2019)	Chapter 1. Linear Equations and Matrices	1.4. Algebraic Properties of Matrix Operations	*No assignment
Week 5 Session 1 (23/10/2019)	Chapter 1. Linear Equations and Matrices	1.5. Special Types of Matrices and partitioned Matrices	*Homework assignment from textbook
Week 6 Session 1 (30/10/2019)	Chapter 2. Solving Linear Systems	2.1. Echelon Form of a Matrix	*No assignment
Week 7 Session 1 (06/11/2019)	Chapter 2. Solving Linear Systems	2.2. Solving Linear Systems	*Homework assignment from textbook
Week 8 Session 1 13/11/2019	Chapter 2. Solving Linear Systems	2.3. Elementary Matrices, Finding A^{-1}	*No assignment
Week 9 Session 1 (20/11/2019)	MIDTERM EXAM!		
Week 10 Session 1 (27/11/2019)	Chapter 3. Determinants	3.1. Definition (Determinant)	*Homework assignment from textbook
Week 11 Session 1 (04/12/2019)	Chapter 3. Determinants	3.2. Properties of Determinants	*No assignment

Week 12 Session 1 (11/12/2019)	Chapter 3. Determinants	3.3. Cofactor Expansion	*Homework assignment from textbook
Week 13 Session 1 (18/12/2019)	Chapter 3. Determinants	3.4. Inverse of a matrix	*No assignment
Week 14 Session 1 (25/12/2019)	Chapter 3. Determinants	3.5. Other Applications of Determinants (Cramer's Rule)	*Homework assignment from textbook