

The American University of Kurdistan (AUK)
MAT 220 – Linear Algebra
Course Syllabus
Fall 2018

Course Title: Linear Algebra

Description: This course worth 2 semesters credit hours and satisfies the Mathematics requirement and meets specific requirements for programs as outlined in the AUK Undergraduate Catalog. This is an undergraduate course in linear algebra includes linear equations, matrix algebra, vector spaces, Eigenvalues and Eigenvectors, and orthogonality and symmetry, for students of engineering. Solving systems of linear equations is a necessary tool of many mathematical procedures used for solving science and engineering problems. The student will become competent in solving linear equations, performing matrix algebra, calculating determinants, and finding eigenvalues and eigenvectors. On the theoretical side, the student will come to understand a matrix as a linear transformations relative to a basis of a vector space.

Prerequisites: Passing the high school algebra is required prior to taking this course.

Semester, Section Number, and Classroom: Spring 2019, MAT 220
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Instructor: Daner Ferhadi

Office: Main Campus – Second Floor - Faculty Room
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E-mail/Phone: Daner.ferhadi@auk.edu.krd
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Office Hours: Wednesdays 2 pm to 3 pm
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Webpage: Teams (you will be added)

Attendance:

Attendance is required at each class meeting. Participation in University sanctioned activities or in military duties and situations where the institution's policy on inclement weather is applicable are considered excused absences. However, non-attendance does not relieve a student of the responsibility for work covered or assigned. The instructor will keep a record of attendance for each student. Once the absence rate exceeds 10%, it will be reported to the Academic Committee and ARD for actions.

It's expected that you will study your class notes, sections in the textbook, and homework problems until you fully grasp each concept. This is estimated to be three hours of study time for every hour of class time. If you need additional help after this period of study, it is expected that you will seek tutorial by attending office hours and by meeting with fellow students.

Required Text: *Linear Algebra and Its Applications*, 3rd Edition Update, by David C. Lay. Pearson, 2006.

Purpose:

The purpose of studying calculus is simply to introduce the students' mind to principles of linear algebra that is useful in all parts of engineering and some other science disciplines. The concepts of this course are also extremely useful in physics, economics and social sciences, and natural sciences. Linear algebra is one of the most widely taught subject in college-level mathematics due to its broad range of applications.

Learning Outcomes:

Upon completion of this course with a passing grade, the student will have a good understanding of the following topics and their applications:

- Systems of linear equations
- Row reduction and echelon forms
- Matrix operations
- Linear dependence and independence
- Orthogonal bases and projections
- Determinants and their properties
- Cramer's Rule
- Eigenvalues and eigenvectors
- Diagonalization of matrix
- Symmetric matrices
- Positive definite matrices
- Linear transformations

Course Requirements: In order to accomplish the learning outcomes of this course, the learner is required to

- Attend class lectures
- Participate in class activities
- Read and study assignments
- Solve assigned problem sets
- Complete test, quizzes, homework, etc.
- Complete a comprehensive final exam

If you do not take a final exam, you cannot pass the course.

Calculators: Calculators are not allowed on quizzes, midterms, or final examination.

Quizzes: There will be in-class pop quizzes throughout the semester. No makeup quizzes will be given without an official documented University conflict.

Personal business, such as travel, employment, family obligations, illness, weddings, graduations, and attendance at public events, is not an official, documented University conflict. The three dropped quiz scores are intended to provide you with some flexibility with respect to personal business. If you feel that there are extenuating circumstances that should qualify you for an exception to this policy, you may schedule an appointment with me to discuss the issue in person.

Homework:

Homework will be assigned for every section in the text book.. You should keep track of your homework progress throughout the semester. The aim is to make you try to solve them yourself. Therefore, full credit will be given for assignments turned in on the due date whether they are solved right or wrong but credit will be deducted for incomplete assignments.

Late homework will be conditionally accepted under the following rules:

- No credit will be given for a homework more than one week late. Late homework will be accepted for 75% credit.

Chapters To Be Covered in the Required Text Book:

Lecture No.	Dates to be finished	Book Chapter
1 to 4	January 27th, 2019	1. Linear Equations
5 to 8	February 3rd, 2019	2. Matrix Algebra
9 and 10	February 10 th , 2019	3. Determinants
11 to 14	February 24 th , 2019	4. Vector Spaces
15 to 18	March 17 th , 2019	5. Eigenvalues and Eigenvectors
19 to 22	April 7 th , 2019	6. Orthogonality and Least Squares
23 to 26	April 21 st , 2019	7. Symmetric Matrices and Quadratic Forms

Course Evaluation and Grading:

Course grades will be assigned on the basis of 500 points distributed as follows:

Midterm	150 points
Quizzes & Homework	150 points
Final Examination	200 points

Final course grades will be assigned as follows:

Grade	Points Collected	Percentage	Grade Points	Meaning of Grade
A	450-500	90.00 –100	4.00	Excellent
B ⁺	425-449	85.00-89.99	3.67	Very Good
B	400-424	80.00-84.99	3.00	Very Good
C ⁺	375-399	75.00 -79.99	2.67	Good
C	350-374	70.00-74.99	2.00	Good
D ⁺	325-349	65.00-69.99	1.67	Satisfactory
D	300-324	60.00-64.99	1.00	Pass
F	Less than 300	Less than 60	0.00	Fail
IP			0.0	The course is still in progress
I			0.0	Assigned for incomplete course

Examinations: One Midterm will be given during the semester in addition to the final exam. The time for time allotted will be 90 minutes. The time of the examinations will be announced at least one week prior to the exam with potential to be in the second week of March.

Final Exam: The final examination is a comprehensive examination given to all students enrolled in MATH 220. Students are required to have completed the final examination as per the scheduled date/time for their respective section: see Academic Calendar on AUK website. The final examination is **closed book and closed notes**. Examination pamphlets and scratch paper are provided by the exam proctor. Unexcused absences for the final examination result in a course grade of F. The final exam will take place during the final exam period and will be scheduled during the semester. See the Academic Calendar on AUK website for the exam period timing.

Judicial Statement/Academic Misconduct

Academic misconduct is defined as plagiarism, cheating, fabrication, or facilitating any such act. For purposes of this section, the following definitions apply:

- (1) Plagiarism: The adoption or reproduction of ideas, words, statements, images, or works of another person as one's own without proper acknowledgment.
- (2) Cheating: Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. The term academic exercise includes all forms of work submitted for credit or hours.
- (3) Fabrication: Unauthorized falsification or invention of any information or citation in an academic exercise.
- (4) Facilitation: Helping or attempting to help another to violate a provision of the institutional code of academic misconduct.

Academic misconduct will result in actions taken as defined by the AUK. In addition to other possible disciplinary sanctions that may be imposed through regular institutional procedures as a result of academic

misconduct, the instructor has the right to assign an F or a zero for the work in question, or to assign an F for the course. If a student believes he or she has been falsely accused of academic misconduct, and if his or her final grade has been lowered as a result, the student may appeal the case through the appropriate institutional procedures.

Drop/Withdrawal Policy and Dates

Drop and withdrawal are to be in accordance to AUK policy.

General conduct in class

The instructor has primary responsibility for control over all classroom behavior and can direct the temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or conduct which otherwise violates the general rules and regulations of AUK.