



Dallas College · School of Engineering, Technology, Math and Science · Engineering (ENGIN)

Applied Linear Algebra

ENGR-2300

Spring 2025 Section 82701 3 Credits 01/21/2025 to 05/15/2025 Modified 01/13/2025

Instructor Contact Information

Instructor: Prof. Bushra Dweik

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Office: WH. 182

Phone: 2142383769

Office Hours

Monday, Wednesday, 12:20 PM to 1:20 PM, WH 182

Wednesday, 9:00 AM to 11:00 AM

Friday, 10:00 AM to 11:00 AM, Virtual on Teams

Course Information

Class Meetings:

Bldg	Room	Type	Days	Start Time	End Time
CET	INET	INET	M T W R F S U		

Withdraw Date:04/17/25

Certification Date:02/03/25

Course Description

Matrices, vectors, determinants, linear systems of equations, Gauss-Jordan elimination, vector spaces, basis, eigenvalues, eigenvectors, numerical methods in linear algebra using MATLAB, computer arithmetic, Gaussian elimination, LU factorization, iterative solutions to linear systems, iterative methods for estimating eigenvalues, singular value decomposition, QR factorization.

Requisites

Required: MATH 2414.

State-Defined Learning Outcomes

Instructor-Defined Learning Outcomes

The student will apply aspects of linear algebra to solve a variety of engineering and scientific problems.
The student will use MATLAB or a similar software tool to make mathematical computations

Required Course Materials

[Course Materials Link \(https://www.bkstr.com/webApp/discoverView?bookstore_id-1=612&term_id-1=3&dept-1=ENGR&course-1=2300§ion-1=82701\)](https://www.bkstr.com/webApp/discoverView?bookstore_id-1=612&term_id-1=3&dept-1=ENGR&course-1=2300§ion-1=82701)

Elementary Linear Algebra

Author: Larson

Publisher: Cengage

Edition: 8th Edition

ISBN: 9781337879606

Graded Work

The "**Criteria**" table below is a summary of all the graded work in this course.

The "**Breakdown**" table explains the final letter grade.

Criteria

Type	Weight	Topic	Notes
DB Introductions	10 points		Introduce yourself to class on Discussion board.
Assignments	440 Points	40 points each	12 assignments will be given, each worth 40 points. The top 11 assignment scores will be used in the final grade calculation.
Matlab project	50 points	One project	
Tests	300 Points	150 points each	Two tests (Test 1 and Test 2) will be administered. If the prorated score of the final test (scaled to 150 points) is higher than the lower of the two test scores, it can replace the lower score.

Type	Weight	Topic	Notes
Final Test	200 points	Comprehensive test	If the prorated score of the final test (scaled to 150 points) is higher than the lower of the two test scores, it can replace the lower score.

Breakdown

Grade	Range	Notes
A	895-1000	
B	795-894	
C	695-794	
D	595-694	
F	Less than 595	



Course Schedule

The table below is a summary of course topics and due dates.

Your instructor will notify you of any changes to the schedule during the term.

When	Topic	Notes
Week 1 1/21-1/26	Syllabus, DB introductions, WebAssign orientation Book/Lecture/Video 1.1 Introduction of systems of Linear equations	Read through Syllabus; e-campus and WebAssign exploration Assignment 0 (Practice using WebAssign for assignments) No Grade associated.
Week 2 1/27- 2/2	Book/ Lectures/ Videos 1.2 Gaussian elimination and Gauss-Jordan elimination.	Assignment 1 Due Sun. 2/2 by midnight
Week 3 2/3-2/9	Book/ Lectures/ Videos 1.3, 2.1, 2.2 Applications (curve fitting, networks) Operations with matrices; Properties of Matrix Operations	Assignment 2 Due Sun. 2/9 by midnight
Week 4 2/10-2/16	Book/ Lectures/Videos 2.3, 2.4..... The inverse of a matrix; Elementary matrices	Assignment 3 Due Sun. 2/16 by midnight

When	Topic	Notes
Week 5 2/17-2/23	Book/ Lecture 2.6 Applications (Cryptography) Review chapters 1 & 2	Assignment 4 (Review assignment) Due Sun. 2/23 by midnight Optional Teams review session Tuesday 2/18 at noon. Link will be sent via announcements and email.
Week 6 - Test 1 2/24--3/2 Test 1 ---- online	Online Test 1 on Monday.... Book/ Lectures/ videos 3.1..... The Determinant of a matrix	Test 1 opens Monday 2/24 12:01 Am and closes 11:59pm
Week 7 3/3--3/9	Book/ Lectures/ Videos 3.2, 3.3.... Determinants and Elementary Operations..... Properties of Determinants	Assignment 5 Due Sun. 3/9 By midnight
Week 8 3/10--3/14	Spring Break	Enjoy
Week 9 3/17--3/23	Book/ Lectures/ Videos 3.4, 4.1..... Applications of Determinants . Vectors.	Assignment 6 and Matlab Project Due Sun. 3/23 by midnight.
Week 10 3/24-3/30	Book/ Lectures/ Videos 4.2, 4.3, 4.4 Vector spaces and Subspaces . Spanning sets and linear independence.	Assignment 7 Due Sun. 3/30 by midnight
Week 11 4/1-4/6	Book/ Lectures/ Videos 4.5 Basis and dimension	Assignment 8 Due Sun. 4/6 by midnight Monday 3/31 is Cesar Chavez Holiday.

When	Topic	Notes
Week 12 4/7--4/13	Book/ Lectures/ Videos 4.6 Rank of a matrix and systems of linear equations Review chapters 3 & 4	Assignment 9 (Review Assignment) Due Sun. 4/13 by midnight Optional Teams review session Tuesday 4/8 at noon. Link will be sent via announcements and email.
Week 13 - Test2 4/14--4/20 Test 2 ---- Online	Online Test 2 M 4/14 Book/ Lectures/ Videos 5.1 Length and dot product in R^n	Test 2 opens Monday 4/14 12:01 Am and closes 11:59pm
Week 14 4/21--4/27	Book/ Lectures/ Videos 5.2 Inner Product spaces	Assignment 10 Due Sun. 4/27 by midnight.
Week 15 4/28--5/4	Book/ Lectures/ Videos 5.3 Gram-Schmidt Process 2x2, then 3x3	Assignment 11 Due Sun. 5/4 by midnight
Week 16 5/5-5/11	Book/ Lectures/ Videos 7.1 Eigenvalues and Eigenvectors Review Course material.	Assignment 12 Due Sun. 5/11 by midnight Optional Teams review session Tuesday 5/6 at noon. Link will be sent via announcements and email.
Week 17 Monday 5/12/25 Final Test ---- - Online	Final Test	Final test opens Monday 5/12/25 12:01 Am and closes 11:59pm Have a wonderful Summer!

* Course Policies

Cooperation and discussions among students are encouraged, but turned in assignments need to be the student's individual work.

Students must abide by the engineering/ college ethics.

Unexpected Class Changes

I will post announcements regularly on our eCampus course and send a copy to your email. Please check your Dallas College email frequently to stay informed about emergency updates and other course communications.

Students will also receive email notifications from [Dallas College Emergency Alerts](#). This system will alert you when icy weather or utility outages cancel classes, or in the event of other types of emergencies. See [Updating Your Emergency Alerts Information](#) to learn how to update your email address for emergency alerts, choose to be alerted by text message or phone call, or opt out of emergency alerts.

Attendance and Participation

Students are expected to read the textbook, practice examples, watch related videos, and complete assignments.

If assistance is needed, students should reach out via email or request an online Teams meeting.

Optional test review sessions will also be offered.

Late Work

Start your assignments early in the week to account for any unexpected situations, and ensure they are submitted on time, even if incomplete.

Late assignments or projects will not be accepted.

The lowest or missed assignment out of the 12 will be dropped.

Make-up tests will only be allowed under extraordinary circumstances discussed with the instructor in advance.

Tests are available within a 24-hour window, but once started, they must be completed in one sitting. Be sure to allocate enough time to finish the test.

Support Contacts

[Contact Your Success Coach \(https://www.dallascollege.edu/successcoach\)](https://www.dallascollege.edu/successcoach)

Every Dallas College student has a personalized Success Coach who supports them from day one to graduation. Contact your coach for help navigating college and reaching milestones leading to graduation and a career.

[Get Free Tutoring \(https://www.dallascollege.edu/tutoring\)](https://www.dallascollege.edu/tutoring)

Tutoring is free to all current Dallas College students. You can walk in or schedule an appointment at all [Learning Commons \(https://www.dallascollege.edu/learningcommons\)](https://www.dallascollege.edu/learningcommons) campus locations. Live, online tutoring is also available via eCampus.

[Explore More Free Student Resources \(https://www.dallascollege.edu/help\)](https://www.dallascollege.edu/help)

You have access to many free resources as a Dallas College student, including [Counseling and Psychological Services \(https://www.dallascollege.edu/counseling\)](https://www.dallascollege.edu/counseling), [Child Care Resources \(https://www.dallascollege.edu/childcare\)](https://www.dallascollege.edu/childcare), [Housing Resources \(https://www.dallascollege.edu/housing\)](https://www.dallascollege.edu/housing), [Emergency Aid Funds \(https://www.dallascollege.edu/emergencyaid\)](https://www.dallascollege.edu/emergencyaid), [Food Pantries \(https://www.dallascollege.edu/foodpantry\)](https://www.dallascollege.edu/foodpantry), and more!

[Submit the Student Care Form \(https://www.dallascollege.edu/careform\)](https://www.dallascollege.edu/careform)

Not sure which free college resources can help? Submit the Student Care Form! Our [Student Care Network \(https://www.dallascollege.edu/studentcare\)](https://www.dallascollege.edu/studentcare) will connect you to support for physical and mental health, financial concerns, food, clothing, and more.

[Contact Technical Support \(https://www.dallascollege.edu/techsupport\)](https://www.dallascollege.edu/techsupport)

Need help with eCampus or another college technology? Our technical support staff can assist you.



Institutional Policies

Dallas College Policies

Please review the [Institutional Policies \(https://www.dallascollege.edu/syllabipolicies\)](https://www.dallascollege.edu/syllabipolicies) page to learn about accommodations for students with disabilities, class drop and repeat options, Title IX (harassment, discrimination, and sexual misconduct), and more.