ENGR 2300 – 001 Course Syllabus

Course Information

ENGR 2300-001 Linear Algebra for Engineers

Spring 2025

T/Th 1:00– 2:45 @ ECSN 2.126 Lab: Th 10:00-10:50 @ FO 2.702

Professor: **Dr. Jung Lee Office: ECSN 3.510**

Office Hours: **T/W**: **10:00-11:00**am Or others by appointment

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TA:

Course Description

Matrices, vectors, system of linear equations, Gauss-Jordan elimination, LU factorization and rank, Determinants and solutions of linear systems. Vector spaces, linear independence, basis, and change of basis. Linear transformations and matrix representation; similarity. Scalar products, orthogonality, Gram-Schmidt process, and QR factorization. Eigenvalues, eigen vectors, and diagonalization. Introduction to problem solving using MATLAB. This course includes a required Lab.

Student Learning Objectives

Students are expected to be able to:

1. Solve Ax = b for linear system by elimination
2. Determine bases and dimensions for the four fundamental subspaces
3. Compute determinants and understand their properties
4. Compute eigenvalues and eigenvectors
5. Explore engineering applications that are built on concepts from linear algebra

Prerequisite: MATH 2419 (Calculus II) or MATH 2414 (Integral Calculus)

Required Textbooks and Materials

TEXTBOOK: “Elementary Linear Algebra” by Ron Larson, Cengage Learning, 7th Edition or later (**HW problems are from 8th Ed.)**

Class Work will be posted in eLearning. Students must have access to eLearning

Assignments & Academic Calendar Topics:

1. System of linear equations. Gauss-Jordan elimination
2. Matrices, Inverse of Matrix, LU factorization, Stochastic matrix, Cryptology 3. Determinants,

Cramer's rule, Application of determinants
4. Partial Vector spaces, subspaces, Basis, change of basis
5. Inner product spaces
6. Linear Transformation
7. Eigenvalues and Eigenvectors

Important Dates:

Last day to drop a course w/o "W": 2/5 (W)
Last day to drop a course "w/ WP/WF" : 4/9 (W)
Spring Break: 3.17- 3.23 Last day of classes: 5.9 (F)
Final Exam: 5.12(M) 11:30-1:00pm

Grading Policy

A: 90.00% or better (> 90.00%)   B: 80.00% or better (> 80.00%)

C: 70.00% or better (> 70.00%)

Course & Instructor Policies

*** The dates for tests can be changed at the discretion of the instructor.**

** **The final exam is comprehensive (1 hr. and 30 min.)**

HW: 20%

HW will be assigned weekly. **HW** will be collected **Tuesday** at the beginning of the class period.

Write on one-side of paper only. Late HW- 33 % off per day. No need to Turn in 3 days after due.

QUIZ: 20%

Quiz will be given **every Wednesday**. (10 points each quiz) Quiz question(s) will be given during class hour. The lowest quiz score will be dropped &
Missed quizzes cannot be made up. Late Submission (Quiz) is accepted with penalty (33% off /10 min. after due time)

EXAM I, II & FINAL EXAM

The optional final exam can replace the lowest exam grade. No Make-up exam will be given. The missed exam will be replaced by the Final exam.

Late Submission (TEST I, Il, and Final) will be accepted with penalty (10 % per 10 min.)

Participation Grade (10%):
Class and lab attendance are mandatory. Absences will result in the following deductions:

- **Each Class absence**: 2% deduction. * **Each Lab absence**: 1% deduction

- 1 excused absence for both class and lab is allowed.
- **Tardy Policy**:
  Arriving **15 to 45 minutes** late to class will be considered tardy and result in a **1%** deduction from your participation grade.
  Arriving **45 minutes or later** will result in a **2%** deduction.
- Accepted excused absences include university-related trips or sickness (with a doctor's note).
  * Please inform me before the class if you will be absent – no exception.
  ***Automatic Fail**: Missing 6 consecutive days of class will result in an automatic failure (F).

Extra Points:
Any extra points earned will be added to your homework score.
Attendance Corrections:
Any attendance discrepancies must be corrected within one week.
Homework/Quiz/Test Corrections:
Corrections for returned work (HW, QUIZ, TEST) must be made within two weeks of the **returned date**.

Classroom Citizenship:
Please maintain respectful behavior in class. Cell phones should be silenced.

Assignment 1: HW #1 – Student Survey (15 pts)

Due: January 28, Tuesday (Type it & Bring to class)
In this assignment, you will complete a survey about yourself. Please respond to the following questions:

1. **Personal Information**:
   - Name, address, telephone (cell) number, email address (where you can be reached).
   - Where are you from? – High school, etc.
2. **Academic Information**:
   - What is your major?
   - What college mathematics classes have you taken (Example: *Calculus II, UTD*.), or are currently taking? (If you are taking a class now, write "NOW (where)"). If you have not taken a class yet, write "NOT YET."
3. **GPA**:
   - What is your current GPA? (Example ranges: below 2.0, 2.0-2.5, 2.6-3.0, 3.0-3.5, 3.5-4.0, or an exact GPA).
4. **Course Concerns**:
   - Do you have any concerns about this course? If so, please describe them.
5. **Study Plan**:
   - What is your study plan for this course?
6. **Current Semester**:
   - How many credit hours or classes are you taking this semester?
7. **Work and Scholarships**:

    - If you work, where do you work and how many hours per week?
    - If you are on a scholarship, what type of scholarship do you have and how does it support your studies?
8. **Future Plans**:
    - What are your future academic or career plans?
9. **Additional Information**:
    - Is there anything else you would like me to know about you?

Portfolio (Optional) – 15 pts

Due: Final Exam (May 12) or before. Please upload to eLearning. The portfolio is a collection of your best work for the course and should include the following:

1. **Reworked Assessments**:
    - Redo the two tests and all quizzes.
2. **Problem Solving**:
    - Select and solve five problems from each chapter we have covered. (Include one problem from Chapter 11.)
3. **Course Reflection**:
    - Write a commentary on what you have learned throughout the course.
4. **Self-Evaluation**:
    - Include a self-evaluation of your progress and performance in the course.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.
The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.