ENGR 2300 – 002 Course Syllabus

Course Information

ENGR 2300-002 Linear Algebra for Engineers

Spring 2025

M/W 8:30– 9:45 @ FO 2.404 Lab: M 4:00-4:50 @ AD 2.232

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

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

Email: jung.lee@utdallas.edu **Phone**:972-883-4359

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) 11:00-12:30pm

Grading Policy

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

C: 70.00% or better (> 70.00%)

Grading
HW (20%) and Class Participation (10%)
Quizzes (20%)
Test I (25%) Wednesday 3/5 (@ TI auditorium) Class Hour

Test II (25%) Wednesday 4/23 (@ TI auditorium) Class Hour

Final Exam (optional): 5/12 (Tu) (@ TI auditorium) 11:30-1:00

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 **Monday** 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, II, and Final) will be accepted with penalty (10 % per 10 min.)

PARTICIPATION GRADE: 10%

- **Participation grade (10%)**: Class and Lab attendance is mandatory for each class

  (Lab) absence, 2% (1%) will be deducted. 1 absence from class and 1 absence from lab are excused.

- If you miss **6 consecutive days of the classes, you get automatic F. *Any extra points** (if any) will be added to HW score.
- The attendance correction (if any) should be corrected within a week.
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- For returned (graded) HW/Quiz/Test, any correction should be done within two weeks of returned date.

  Classroom Citizenship: General good behavior with cell phones silenced required.

  Assignment
  1. HW #1. Student Survey ... 15 pts **Due: Aug. 26, Monday**

  Type, bring it to the class
  You will be asked to write about you in the following questions as you complete your survey.

- Name, address, telephone (cell) number, e-mail address, where you can be reached.
- What is your major?
- Where are you from?
- What college mathematics classes have you taken, or are you taking it now? From where? If

  If you are taking it now, write as NOW (where) and if you have not taken it yet, write as **not yet.** (Calculus II, III, from UTD, DCC, etc.)

- What is your current GPA?
  (eg., below 2.0, 2.0 – 2.5. 2.6 - 3.0, 3.0- 3.5, 3.5 - 4.0, or an exact GPA)
- What concerns, if any, you have about this course?

- What is your study plan for this course?
- How many credit hours (or classes) are you taking this semester?
- If you work, where and how many hours per week? If you are on scholarship, what kind and how does it cover for your study?
- What is your future plan?
- What else would you like me to know about you?

2. Portfolio (Optional) ... 15 pts
Due The **Final Exam Day (May. 12)** **or Before - Upload it to the elearning**

Portfolio is a collection of a student's best work for the course.

1. **Redo** the **two tests** and **all Quizzes**
2. **Five** solved problems from **each Chapter** (Ch1, 2, 3, 4, 5, 6 7)
3. **Commentary** from the student concerning what you have learned from this work; and)
4. **Self evaluation**

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.