INTRODUCTION TO LINEAR MATHEMATICS

MATH 67-256 Spring 2020

12:40PM – 1:40PM   M,W,F   Swart 127

TEXT: <u>Introduction to Linear Algebra</u> by Gilbert Strang (fourth or fifth edition)

INSTRUCTOR: Dr. Hosien S. Moghadam

OFFICE: Swart 105

PHONE: 424-0069   Email   **moghadam@uwosh.edu**

OFFICE HOURS: 1:50PM-2:50PM   M,W And others by appointment

COURSE COVERAGE: Chapters 1 through 7 with some omissions and additions if necessary. Also sections 8.1, 8.2 and 8.3 if time permits. Topics include Vector spaces, Matrices, Systems of Linear Equations, Determinants, Properties of R^n, Eigenvalues and Eigenvectors, Orthogonality, Linear Transformations, and applications of each of these topics.

CALCULATOR: The TI-84, or TI-86 is required and you should have it during each class time and exams.

SOFTWARE: Note that there are many mathematical software packages for linear algebra including Maple and MATLAB. Maple is installed on the network and can be accessed through some computer labs. The Linear Algebra package of Maple is recommended if you want to explore more in Linear Algebra and its applications.

EXAMS: *90% of your grade*
There will be three one-hour exams, which will account for 90% of your final grade. The dates will be announced a week in advance. No make-up exams except for very special cases and that will be handled on an individual basis. I should be notified in advance if you intend to miss a scheduled test. An optional comprehensive final exam may be given for improving your grade or replacing a missing exam.

QUIZZES AND HOMEWORK: *10% of your grade*
There will be quizzes similar to your assignments. Homework is given after each lecture. Some homework and special assignments may be collected and counted as a quiz. No make-up Quizzes.

GOALS AND EXPECTATIONS:

The main objective of this course is to learn the basic ideas of linear algebra and to see some of its applications. Linear algebra is the study of vector spaces, matrices, and special functions called linear transformations. It is one of the most important tools of applied mathematics used in other fields.

This course is taught with less emphasis on theorem proving. Upon successful completion of this course, it is expected that you have been exposed, gained experience, and improved in the following areas: Content, Communication, Problem Solving, Independent Learning, Reasoning and Validation.

Course Objectives

(1) gain a thorough knowledge of systems of linear equations and techniques for finding and describing their solution sets

(2) become familiar with the fundamental concepts of matrix algebra and their utility in analyzing systems of equations

(3) understand and be able to explain basic linear algebra terms such as vector, matrix, determinant, vector space, linear independence, span, basis, dimension, and linear transformation

(4) work with vectors and matrices to find sums, products, echelon forms, lengths, distances ,angles, various matrix factorizations, characteristic polynomials, eigenvalues, eigenvectors, and dimension

(5) develop skill in solving problems through the use of linear mathematical models, as well as an appreciation for the wide applicability of linear mathematics.

GRADING:

Based on total points of three exams, quizzes, class participation, and presentations.

Grade

$A \in [91,100], A^- \in [89,90]$

$B^+ \in [86,88], B \in [81,85], B^- \in [79,80]$

$C^+ \in [76,78], C \in [70,75]$

$D^+ \in [66,69], D \in [60,65]$

Below 60% is F

Please remember that you should attend class, study the text materials, and do the assigned problems in order to learn and follow the lecture. I expect you to take an active part in class discussions, group work, and class presentations. It is best to bring your work with you when seeking help from me.