YARMOUK PRIVATE UNIVERSITY

جامعة اليرموك الخاصة

Faculty: of Civil and Environmental engineering and Architecture .
Depart : of Civil and Environmental engineering and Architecture

Course Plan

Course Code: **MAT 114** **Course Name:** **Math(1)**

Semester:
Academic Year : 2026

Course Description:

This course considers: systems of linear equations, Elimination methods (Gauss, Jordan), Matrices (operations and, Matrix methods for solving linear systems. Determinats, Vector spaces and subspaces, linear independce, Basis and Dimension, Inner product spaces, Orthonormal bases. Eigenvalues and Eigenvectors, Diagonaliztion, Jordan form, General Linear Transformation. Invers of a Linear Transformation, Kernel and range, Applications.

Credit hours : 3 hours **Theoretical :3 hours** **Practical : 0hours**

Course Objectives

The student will be able to :

- To introduce students to the techniques of matrices, and linear equations systems for solving problems, related to real application.
- To provide students with opportunities to develop their skills to be able to generate new ideas or to invent useful applications in the field of computer science and communication engineering.
- To think and to communicate mathematical ideas.

Textbook: **Linear Algebra, A Modern Introduction,**
Author: David Poole, Year: 2006
International Student Edition, ISBN: 0-534-99845-3

- **Introduction to Matrix Algebra, K. Kaw**
- **Elementary Linear Algebra, K. R. Matthews**
- **Linear Algebra, W. W. L. Chen**
- **Elements of Abstract and Linear Algebra, E. H. Connell**

Course Outline:

Week	Topic	Textbook Chapter
01	The Geometry and Algebra of Vectors	**Ch** 1
02	Length and Angel and The Dot Product	**Ch** 1
03	Lines and Planes	**Ch** 2
04	Systems of Linear Equations	**Ch** 2
05	Spanning Sets and Linear Independence, Applications	**Ch** 2
06	Matrix Algebra, The Inverse of a Matrix	**Ch** 3
07	The LU Factorization, Subspaces, Basis, Dimension and Rank	**Ch** 3
08	Determinants, Linear Transformations, Applications	**Ch** 3
09	**Mid -Term Exam**	
10	Eigen values and Eigenvectors	**Ch** 4
11	Similarity and Diagonaliztion	**Ch** 4
12	Orthogonality, Orthogonal Complements and Orthogonal Projections	**Ch** 5
13	Gram-Schmidt process, and the QR Factorization Orthogonal Diagonalization, of Symmetric Matrices	**Ch** 5
14	Vector Spaces, Subspaces, Linear independence, Basis, dimension Change of Basis	**Ch** 6
15	Linear Transformations, Kernel, Range, The Matrix of a L.T. Inner Product Spaces and complex Numbers	**Ch** 7
16	**Final Exam**	

Evaluation Methodology:

Quizzes and Homework :	**30%**
Laboratory:	**None**
Mid-Term Exam:	**30%**
Final Exam:	**40%**

Instructor's Information:

Name: *Dr. khalil yahya*

Signatures: