



Course Name	Matrix Algebra
Course Number	012 MATH
Credit Hours	3
Contact Hours	3
Course Coordinator	Department of Mathematics, College of Science

Text Books	Howard Anton, Elementary Linear Algebra, 8th Edition, John Wiley & Sons, Inc 2005
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Other Supplemental Materials	
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Specific Course Information

a. Course Description	The course covers systems of linear equations, matrices, and determinants as tools in the study of vector spaces in detail. Linear independence, generators, and dimension are given. Also row space, rank, Eigen values, and Diagonalizable of matrix are given. Finally, the course covers linear transformation, kernel, image and change of basis
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b. Pre-requisite	001 MATH Mathematics 1
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c. Required/ Elective/ Selected Elective	Required
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Specific Goals for the Course

a. Course Learning Outcomes	The course give some methods to solve linear systems using matrix operations, determinants, inverses, Cramer's rule, Gauss-jordan elimination.
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Topics Covered	<p>Introduction to the system of linear equations. Augmented matrices. Elementary row operations</p> <ul style="list-style-type: none"> • Gaussian Elimination Reduced row-Echelon form. Gauss-Jordan elimination. Back-Substitution Homogeneous linear system of equations. • Matrices and Matrix operations. Matrix form of a liner system. Transpose and Trace of a matrix • Properties of matrix operations. Properties of inverses and transpose • A method for finding the inverse of a matrix. Further results on systems of equations and inevitability • Diagonal, triangular and symmetric matrices. • The determinant function - Evaluating determinants by row reduction • Properties of the determinant function • . Cofactor expansion-Cramer's rule-Inverse of a matrix using its ad joint. • Vector space, Linear dependent and linear independent , Eigen values and Eigen vectors • Basis and Dimensional of vector space
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