


Sub.	Course Description – توصيف مقرر دراسي	الموضوع	 كلية المعرفة ALMAAREFA COLLEGE
Date		التاريخ	

Course Code & No	MATH 441	441 رياض	رقم المقرر ورمزه
Course Name	Linear Algebra	الجبر الخطي	اسم المقرر
Credit Hours	3 (3 + 0 + 0)	(0 + 0 + 3) 3	عدد الساعات المعتمدة
Pre-requisite	MATH 301	301 رياض	المتطلب السابق


General Description	توصيف عام
<p>In this course, students will learn fundamental concepts of linear algebra in the concrete setting of R^n and use them to solve problems from engineering and other fields and will learn how to use computer software to apply the techniques of linear algebra. Topics include: Matrices and operations with matrices, Determinants, Vector spaces, Independent and dependent sets of vectors, Bases for vector spaces, Linear transformations Eigenvalues and eigenvectors, Orthogonal sets and least squares approximation.</p>	

Course Objectives	أهداف المقرر
<ul style="list-style-type: none"> • perform basic matrix calculations • use matrices to solve systems of linear equations • find least-squares solutions of linear systems • set up and solve linear systems in applied problems • explain the basic concepts of linear algebra (subspace, span, linear independence, basis, dimension) • identify and work with these concepts in R^n 	

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<ul style="list-style-type: none"> • find an orthonormal basis for a subspace • identify a linear transformation and find and use its matrix representation • compute determinants of matrices • compute eigenvalues and eigenvectors of matrices • use eigenvalues and eigenvectors to diagonalize matrices and to solve systems of linear ODEs • use MATLAB to solve problems involving linear algebra 	
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Course Outlines	مفردات المقرر
<ul style="list-style-type: none"> • Matrices and Systems of Linear Equations • Solution of linear systems • Matrices and matrix algebra • Linear independence • Matrix inverses • Vectors in 2-Space and 3-Space • The Vector Space R^n • Subspaces • Orthogonal bases • Linear transformations • Least-squares problems • The Eigenvalue Problem • Determinants • Eigenvalues and eigenvectors • Diagonalization 	

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References	المراجع
<ul style="list-style-type: none"> Johnson, Riess, and Arnold. <i>Introduction to Linear Algebra</i>, 5th edition, 2002, Addison-Wesley. Kolman & Hill, <i>Introductory Linear Algebra with Applications</i>, 7th edition 2004, Prentice-Hall, ISBN: 0-13-018265-6. 	