

**Linear Algebra in Business (QUA 204)**

**Batch: Semester II (1441 H) (2019/2020 AD) Credit hours: 3 No. of Sessions: 42**

**Course Facilitator: Dr Nadia Sarhan Sections: …………….**

**Office: Building 3- 2nd Floor, Office No. 115 E-mail: nsarhan@ksu.edu.sa Lectures days: Sunday-Tuesday-Thursday Office Hours: Sunday- Tuesday- Thursday**

**Course Objectives**

This course is designed to help the student to:

\* Use the techniques of matrices to analyze and solve problems.

\* Use the concept of vector space to visualize the solution of problems.

\* Use matrices to model problems.

**Content of the Course and Session Plan**

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| **Session** | **Content** |
| Sessions1-3 | Systems of linear equations, Triangular Form, |
| Sessions4-6 | Equivalent Linear Systems, Elimination method |
| Sessions7-9 | Augmented Matrix, Echelon form of a matrix. |
| Sessions 10-15 | Matrix Algebra, Addition and Scalar Multiplication, Matrix Multiplication, Transpose of a Matrix, Gaussian-Jordan elimination. |
| Sessions 16-24 | Matrix Equations, Homogeneous Matrix, Inverse of a square Matrix, Determinants, Minors and Cofactors, Cramer’s Rule, Solving Linear System of Equations. |
|  | **First Midterm (25 points)** – **Thursday (17/7/1441 - 12/3/2020) (12:00-1:30 PM)** |
| Sessions 25-33 | Vectors, Linear Combinations and Linear Independence, Rank of a Matrix, Orthogonal Matrices, Vector Spaces |
| Sessions 34-39 | Eigenvalues and Eigenvectors |
|  | **Second Midterm (25 points)** – **Sunday (12/8/1441 -5/4/2020) (12:00-1:30 PM)** |
| Sessions 40-42 | Inner product spaces (If time permits) |
|  | **Duties & Participations (10)** |
|  | **Final Exam (40 points)** |

**Text Books Recommended:**

1. ***Introduction to Linear Algebra with Applications,*** by Jim DeFranza and Daniel Gagliardi. McGraw-Hill (2009).
2. ***Elementary Linear Algebra,*** by Howard Anton and Chris Rorres. Wiley (2009).