

**J. Sargeant Reynolds Community College
Course Content Summary**

Course Prefix and Number: MTH 285

Credits: 3

Course Title: Linear Algebra

Course Description (including lecture hours, lab hours, total contacts)

Covers matrices, vector spaces, determinants, solutions of systems of linear equations, basis and dimension, eigenvalues and eigenvectors. Designed for mathematical, physical, and engineering science programs. Lecture 3 hours per week.

General Course Purpose

This course provides preparation for upper level mathematics and computer science courses.

Course Prerequisites/Corequisites (*Entry-level competencies **required** for enrollment*)

The course prerequisite is MTH 174 or equivalent.

Course Objectives (Each item should complete the following sentence.)

Upon completing the course, the student will be able to:

- a. Solve a system of linear equations.
- b. Perform operations on matrices.
- c. Evaluate and use determinants.
- d. Determine if a set is a vector space.
- e. Determine if a set of vectors is linearly independent; find the span of the set.
- f. Find the basis and the dimension of a vector space.
- g. Determine the kernel and range of a linear transformation.
- h. Find the standard matrix for a linear transformation and give geometric interpretations of the linear transformation.
- i. Find the eigenvalues and eigenvectors of a given matrix.

Major Topics to be Included

- a. Solutions of Systems of Linear Equations
- b. Matrices
- c. Vector Spaces
- d. Determinants
- e. Linear Independence, Basis and Dimension
- f. Eigenvalues and Eigenvectors
- g. Linear Transformations

Effective Date of Course Content Summary (Month, Date Year): Fall 2007