

JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Linear Algebra

Course Abbreviation and Number: MAT 2670

Credit Hours: 3

Course Type: Lecture

Course Description: Students will learn the algebra and geometry of finite-dimensional vector spaces and their linear transformations, the algebra of matrices and determinants, characteristic values and vectors, and diagonalization of matrices. A computer algebra system such as DERIVE is incorporated into the course. This course is intended for students majoring in mathematics, computer science and engineering.

Prerequisite: MAT 1720.

General Education Requirements Met

SUNY

Math

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Perform matrix operations.
2. Describe a vector space and find its basis and dimension.
3. Use matrices for linear transformations.
4. Find the Eigenvalues and Eigenvectors of a matrix.
5. Recognize the importance of ethical behavior in fostering a community of mutual respect and dignity.

A pre-requisite for this course is approved for the SUNY General Education category listed. This course will reinforce the student learning outcomes for this category.

Topics Covered:

- Introduction to Linear Equations and Gaussian Elimination
 - Matrix Algebra
 - Determinants
 - \mathbb{R}^n
 - Vector Spaces
 - Subspaces
 - Spanning sets and linear independence
 - Basis and Dimension
 - Rank of a matrix
 - Change of Basis (if time)
 - Length and Dot Product
 - Inner Product Spaces
 - Orthonormal Bases
 - Least Squares Analysis
 - Linear Transformations
 - Kernel and Range
 - Matrices for linear transformations
 - Transition Matrices and Similarity (if time)
 - Eigenvalues and Eigenvectors
 - Diagonalization
 - Symmetric Matrices and Orthogonal Diagonalization
 - Applications of Eigenvalues and Eigenvectors
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Information for Students

- Expectations of Students
 - [Civility Statement](#)
 - [Student Responsibility Statement](#)
 - [Academic Integrity Statement](#)
- [Accessibility Services](#)
Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
- [Get Help: JCC & Community Resources](#)
- [Emergency Closing Procedures](#)
- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0
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- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.
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Effective Date: Fall 2021