



## **CORE COURSE PERFORMANCE OBJECTIVES**

The student will be able to:

1. Perform matrix operations and use them in application problems (CCC 1,2,6,7)
2. Use determinants to solve systems of equations and applied problems (CCC 2,6,7)
3. Perform basic vector operations on vector spaces (CCC 2,6,7)
4. Represent linear transformations using matrices and perform basic operations on linear transformations (CCC 1,2,6,7)
5. Find eigenvalues and eigenvectors for matrices and use them in applications (CCC 1,2,6,7)

## **MEASURABLE PERFORMANCE OBJECTIVES**

### **1. Perform matrix operations and use them in application problems (CCC 1,2,6,7)**

- 1.1 Perform elementary matrix operations:
  - a. Gaussian elimination
  - b. Inverses
  - c. Transpositions
  - d. Symmetries

1.2 Apply matrix operations to applications problems.

### **2. Use determinants to solve systems of equations and applied problems (CCC 2,6,7)**

2.1 Perform cofactor expansion.

2.2 Apply Cramer's Rule.

2.3 Use determinants to solve applied problems.

### **3. Perform basic vector operations on vector spaces (CCC 2,6,7)**

- 3.1 Perform basic vector operations:
  - a. dot product
  - b. norm
  - c. distance
  - d. projections

- 3.2 Perform basic operations on vector spaces:
  - a. define a vector space
  - b. define a subspace
  - c. perform orthogonal projections
  - d. use the Gramm-Schmitt on a given set of linearly independent vectors

**4. Represent linear transformations using matrices and perform basic operations on linear transformations (CCC 1,2,6,7)**

- 4.1 Find null spaces, row spaces and column spaces.
- 4.2 Investigate linear independence.
- 4.3 Find bases for vector spaces.
- 4.4 Find the rank and nullity.
- 4.5 Investigate inner product spaces.

**5. Find eigenvalues and eigenvectors for matrices and use them in applications (CCC 1,2,6,7)**

- 5.1 Find eigenvalues and eigenvectors for matrices.
- 5.2 Solve systems using eigenvalues.

**EVALUATION CRITERIA**

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The final grade will be determined using the College Grading System:

92 - 100	A
83 - 91	B
75 - 82	C
0 - 74	R

**Students should refer to the Student Handbook for information on Academic Standing Policy, Academic Honesty Policy, Students Rights and Responsibilities and other policies relevant to their academic progress.**