

## **M 533 – Theory and Applications of Linear Algebra**

### **Course (Catalog)**

**Description:** This course is designed to provide students with a theoretical understanding of linear algebra and the application of linear algebra to other fields. Topics include vector spaces, spectral theory, Jordan canonical forms, matrix factorizations, and numerical methods for matrix algebra.

**Prerequisite:** M 333 or equivalent

**Textbook:**

**Number of credits:** Three

### **Learning Outcomes:**

- Develop a sound understanding of the theoretical underpinnings of concepts from linear algebra
- Connect linear algebra to other topics in mathematics like polynomials, complex numbers, and geometry
- Factor matrices and understand how matrix factorizations are used to solve problems
- Identify different types of special matrices and the properties of these special matrices
- Prove theorems from linear algebra (graduate course only)

### **Grading for undergraduate course:**

Homework	= 100 points
Midterm	= 100 points
Final	= 100 points

### **Grading for graduate course:**

Homework	= 50 points
Weekly problem sets	= 50 points
Midterm	= 100 points
Final	= 100 points