Course Name: INTRODUCTION TO MATRIX ALGEBRA

Course Number: MTH 264

Course Credits: 2

Terms offered: Fall, Winter, Spring, Summer

Meetings per term: Fifteen 50-minute lectures and five 80-minute recitations.

Enforced Prerequisite: MTH 252 [C-] or MTH 252H [C-].

Catalog Description: Introduction to matrix algebra; systematic solution to systems of linear equations; linear transformations; eigenvalue problems. All courses used to satisfy MTH prerequisites must be completed with a grade of at least C-.

Course Content:
1. Overview of vectors in real Euclidean 2-space and 3-space.
2. Gaussian elimination.
3. Matrix operations, including inversion. Determinants.
4. Linear independence and linear dependence of vectors.
5. Linear transformations.
6. Eigenvalues and eigenvectors.

Course-specific Measurable Student Learning Outcomes: The successful MTH 264 student will be able to
- Use Gaussian elimination to determine the solution set of a system of linear equations.
- Determine whether a square matrix is invertible and find the inverse when it exists.
- Calculate the determinant of a square matrix.
- Determine if a set of vectors in Euclidean n-space is linearly independent or dependent.
- Find the matrix representation of linear transformations with respect to standard bases.
- Find the characteristic polynomial of square matrices.
- Find the eigenvalues and eigenvectors of 2x2 and 3x3 matrices with real entries.

Course schedule:
Week 1: Arithmetic of complex numbers; vectors, dot products and planes; introduction to the systematic solution of systems of linear equations.
Week 2: Gaussian elimination; determinants; matrix operations.
Week 3: Matrix inversion; linear independence and dependence; linear transformations
Week 4: Continuation of linear transformations. Introduction to eigenvalue problems.
Week 5: Calculation of eigenvalues (including complex) and eigenvectors. Review Day.

**Evaluation of Student Performance:** Your grade and the measurement of your progress in the course and its learning outcomes will be based on weekly written homework, quizzes and other classroom activities, along and a comprehensive final exam. Approximate percentages for each category are:

- Weekly quizzes: 35%
- Homework and in-class activities: 25%
- Comprehensive final exam: 40%

**In-class activities:** These non-exam activities occur in an active-learning environment where the instructor and the class together interact with the material through a variety of modes. In addition to weekly quizzes, in recitation students will work in groups and then present their work to the class.

**Students with Disabilities:** Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

**Student Conduct:** Every OSU student is expected to adhere to OSU's Student Conduct Code at [http://studentlife.oregonstate.edu/sites/studentlife.oregonstate.edu/files/final_code_of_student_conduct_updated_1_8_18.pdf](http://studentlife.oregonstate.edu/sites/studentlife.oregonstate.edu/files/final_code_of_student_conduct_updated_1_8_18.pdf)