

Columbus State Community College

Mathematics Department Syllabus

Course and Number: MATH 2568 – Elementary Linear Algebra

Credits: 4 **Class Hours Per Week:** 4

Prerequisites: MATH 1172 or MATH 2153 with a C or higher

COURSE DESCRIPTION: Systems of linear equations, matrices, and determinants; vector space and its subspaces, \mathbb{R}^n , coordinate system and bases; linear transformations; eigenvalues including complex eigenvalues, eigenvectors; inner product and orthogonality, orthogonal matrices; geometric and real-world applications.

COURSE GOALS: To introduce to the student the concepts, methods and applications of topics in linear algebra necessary for further study in sciences and engineering; to present key ideas and concepts from a variety of perspectives, and connections to other subjects; to develop student's mathematical thinking and problem solving ability; and to facilitate student's progression from a procedural/computational understanding of mathematics to a broader understanding encompassing logical reasoning, generalization, abstraction, and formal proof.

INSTITUTIONAL LEARNING GOALS: Critical Thinking and Quantitative Skills

TEXTBOOK, MANUALS, REFERENCES, AND OTHER REQUIRED MATERIALS

- Linear Algebra and its Applications, Fourth Edition, David C. Lay, Pearson Addison-Wesley, 2012.
- A graphing calculator is recommended. The TI-89, TI-92, TI-Nspire CAS, and other Computer Algebra Systems (CAS) are never allowed during proctored assessments.

UNITS OF INSTRUCTION

- Linear Equations in Linear Algebra (Sections 1.1-1.5, 1.7-1.10)
- Matrix Algebra (Sections 2.1-2.3)
- Determinants (Sections 3.1, 3.2)
- Vector Spaces (Sections 4.1-4.7, 4.9)
- Eigenvalues and Eigenvectors (Sections 5.1-5.3, 5.5, 5.6)
- Orthogonality and Least Squares (Sections 6.1-6.6)

GENERAL INSTRUCTIONAL METHODS: Instructional methods may include face-to-face or video lectures or demonstration, face-to-face or virtual discussion, individual or group activities including the use of visual aids, computers and/or other technologies. Students may be expected to participate in these activities during class and/or outside of class. Instructors may require class participation, collaborative learning, and peer review.

STANDARDS AND METHODS FOR EVALUATION: The final examination will be weighted between 25% and 33% (inclusive) of the course grade. The remainder of the course grade will be determined by the instructor.

GRADING SCALE: Letter grades for the course will be awarded using a 90% - 80% - 70% - 60% scale. Grades will NOT be curved, skewed, or otherwise inflated.