

Columbus State Community College Mathematics Department Syllabus

Course and Number: MATH 2174 - Linear Algebra and Differential Equations for Engineering

Credits: 5 **Class Hours Per Week:** 5

Prerequisites: MATH 2173 with a C or higher

DESCRIPTION OF COURSE (AS IT APPEARS IN THE COLLEGE CATALOG)

Matrix theory, eigenvectors and eigenvalues, ordinary and partial differential equations.

COURSE GOALS AND/OR OBJECTIVES

To introduce to the student the concepts, methods, and applications of topics in linear algebra and differential equations necessary for further study in engineering; to present key ideas and concepts from a variety of perspectives; to develop student's mathematical thinking and problem solving ability.

INSTITUTIONAL LEARNING GOALS: Critical Thinking and Quantitative Skills

EQUIPMENT AND TEXTBOOK REQUIRED

- Linear Algebra and its Applications, Fourth Edition, David C. Lay, Pearson Addison-Wesley, 2012.
- Elementary Differential Equations and Boundary-Value Problems, 10th ed., Boyce/DiPrima, Wiley, 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 (Lay 1.1-1.5, 1.7-1.10)
- Matrix Algebra (Lay 2.1-2.3)
- Determinants (Lay 3.1, 3.2)
- Eigenvalues and Eigenvectors (Lay 5.1-5.6)
- Systems of Differential Equations (DiPrima 7.4-7.8)
- Partial Differential Equations and Fourier Series (DiPrima 10.1-10.7)

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 35% (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.