

Columbus State Community College

Mathematics Department Syllabus

Course and Number: MATH 2173 – Engineering Mathematics B

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

Prerequisites: A grade of “C” or higher in MATH 1172

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

Multiple integrals, line integrals, vector fields, second order constant coefficient ODEs.

COURSE GOALS: To develop mathematical thinking and communication skills and to learn to apply precise, logical reasoning in problem solving. To experience geometric as well as algebraic viewpoints and approximate as well as exact solutions. To facilitate the mathematical development of students as they progress from a procedural/computational understanding of mathematics to a broad understanding encompassing logical reasoning, generalization, abstraction, and formal proof and as they become skilled at conveying their mathematical knowledge in a variety of settings, both orally and in writing. To acquaint the students with the basic methods of finding maxima and minima of functions of two variables, multiple integration, vector analysis, and solving elementary second order ordinary differential equations with an emphasis on applications. To further promote and develop students' abilities to think and reason mathematically and prepare them for further study in engineering.

INSTITUTIONAL LEARNING GOALS: Critical Thinking and Quantitative Skills

EQUIPMENT AND TEXTBOOKS REQUIRED

- Calculus: Early Transcendental Functions, 7th Ed., Larson/Edwards, Cengage Learning, 2019.
- Elementary Differential Equations, William F. Trench, Free Edition 1.01 (December 2013)
- 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

- Maxima and Minima for Functions of Two Variables (Larson 13.6, 13.8-13.10)
- Multiple Integration (Larson 14.1-14.3, 14.6-14.8)
- Vector Analysis (Larson 15.1-15.4)
- Second Order Linear Equations (Larson 6.1; Trench 5.1-5.6, 6.1-6.3).

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.