

Columbus State Community College
Mathematics Department Public Syllabus

Course and Number: MATH 2415 – Ordinary and Partial Differential Equations

Credits : 4 **Class Hours per week:** 4 **Prerequisites:** C or higher in MATH 2153

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

A study of the basic concepts and methods of solving ordinary and partial differential equations; slope fields; separable, linear, exact, Bernoulli, and homogeneous first order equations; systems of first order differential equations, homogeneous and nonhomogeneous second order linear equations; Fourier Series, Heat Equation, Wave Equation, and other separable partial differential equations; applications to physical sciences and engineering.

COURSE GOALS: To acquaint the students with the basic methods of solving elementary ordinary and partial 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 TEXTBOOK REQUIRED

- *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

- Introduction to ODEs
- First Order ODEs
- Second Order Linear Equations
- Partial Differential Equations and Fourier Series
- Systems of Differential Equations

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.