Course and Number: MATH 2255 – Elementary Differential Equations
Credits: 4 Class Hours Per Week: 4
Prerequisites: Grade of ‘C’ or higher in MATH 2153

COURSE DESCRIPTION: This course is a study of the basic concepts and methods of solving ordinary differential equations. Topics include slope fields; separable, linear, exact, Bernoulli, and homogeneous first order equations; homogeneous and nonhomogeneous second and higher order linear equations; Laplace transforms; series solutions; numerical methods; applications to physical sciences and engineering.

SPECIAL COURSE REQUIREMENTS: None

COURSE GOALS: To acquaint the students with the basic methods of solving elementary 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 mathematics, science, and engineering.

GENERAL EDUCATION GOALS: Critical Thinking and Quantitative Literacy

EQUIPMENT AND TEXTBOOK REQUIRED
• A graphing calculator such as the TI-83 or TI-84 is highly recommended. Calculators with a computer algebra system (CAS) such as the TI-89 are NOT permitted.

UNITS OF INSTRUCTION
• Introduction to ODEs (Sections 1.1, 1.3)
• First Order ODEs (Sections 2.1, 2.2, 2.4, 2.6, 2.7)
• Modeling with First Order ODEs (Sections 2.3, 2.5)
• Higher Order ODEs (Sections 3.1-3.6, 4.1-4.4)
• Modeling with Higher Order ODEs (Sections 3.7, 3.8)
• Series Solutions of Linear ODEs (Sections 5.1-5.6)
• Laplace Transforms (Sections 6.1-6.4, 6.6)

GENERAL INSTRUCTIONAL METHODS: Lecture, discussion, demonstration, exploration and discovery exercises with the use of visual aids, graphing calculators, and/or computer resources.

STANDARDS AND METHODS FOR EVALUATION: At most 15% of the total grade will come from out-of-class assignments. The final examination will be weighted between 25% and 35% 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.