WILMINGTON UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
BASIC COURSE INFORMATION

COURSE NUMBER: MAT310

COURSE TITLE: Calculus 1

Faculty Name:

Contact Information:

Pre-Requisite: MAT200 with a minimum grade of C or precalculus equivalent

Text/Software:

Credits: 3

40 Hours of Structured Learning Activities

COURSE DESCRIPTION: After a brief review of classes of functions and their properties, this course focuses on students' understanding and application of limits, continuity, techniques for finding the derivative, use of the derivative in graphing functions, applications of the derivative, implicit differentiation, anti-derivatives, areas under the curve, the Fundamental Theorem of Calculus, integration by substitution and differential equations. Students are required to explain their reasoning graphically, numerically, analytically, and verbally.

At the conclusion of this course students will be asked to evaluate the course based on the following objectives:

Gain factual knowledge (terminology, classifications, methods, trends).
Learn fundamental principles, generalizations or theories.
Learn to apply course material (to improve thinking, problem solving and decisions).

COURSE GOALS

GOAL A:
Compute and apply limits.

      Learning Objectives: The student will:
      A-1   Evaluate limits using graphs and rules, including one-sided and infinite limits.
      A-2   Evaluate continuity of functions.
      A-3   Use the limit definition of a derivative and relate it to the slope of a tangent line.

GOAL B:
Compute and apply differentiation.

      Learning Objectives: The student will:
      B-1   Evaluate derivatives from tables and graphs.
      B-2   Compute derivatives using the constant rule, power rule, sum/difference rule, product/quotient rule, and chain rule to compute derivatives for polynomial, exponential, logarithmic, and trigonometric functions.
      B-3   Apply first and second derivatives to graphing functions; increasing, decreasing and concavity.
      B-4   Apply derivatives to optimization, related rates problems, growth and decay models.
      B-5   Apply the Mean Value Theorem.
      B-6   Solve differential equations.

GOAL C:
Compute and apply integration.

      Learning Objectives: The student will:
      B-1   Calculate anti-derivatives and indefinite integrals using basic techniques, such as substitution.
      B-2   Calculate the area under a curve and definite integrals.
      B-3   Apply the Fundamental Theorem of Calculus.

EVALUATION PROCEDURE AND GRADING POLICY:

LATE ASSIGNMENT POLICY:

CAS CLASSROOM STANDARDS: See Blackboard "Syllabus" area

COURSE SCHEDULE (all assignments/exams and due dates):