MONROE COUNTY COMMUNITY COLLEGE
enriching lives

Outline of Instruction

Division:	Science/Mathematics	**Area:**	Mathematics
Course Number:	MATH 171	**Course Name:**	Calculus I
Prerequisite:	MATH 159 or MATH 164, or three years high school mathematics including algebra, geometry, and trigonometry		
Corequisite:	NONE		
Hours Required:	**Class:** 60	**Lab:** 0	**Credits:** 4 (four)

Course Description/Purpose

An introductory course in the study of single variable calculus covering both differentiation and integration. The types of functions covered include algebraic and transcendental. The purpose of the course is to study analysis of single variable functions primarily through differentiation and integration.

Major Units

- Functions
- Limits
- Differentiation
- Integration
- Logarithmic and Exponential Functions
- Logarithmic Functions

Educational/Course Outcomes

Student learning will be assessed by a variety of methods, including, but not limited to, quizzes and tests, journals, essays, papers, projects, laboratory/clinical exercises and examinations, presentations, simulations, portfolios, homework assignments, and instructor observations.

Cognitive Each student will be expected to *Identify/Recognize*. . .

- the definition of a limit;
- the rules of differentiation and integration;
- applications of the derivative as they apply to graphing;
- methods for finding area under a curve;
- formulas applying the integral to find geometric quantities such as volumes, arc lengths, and surfaces;
- formulas for differentiating and integrating logarithms and exponential functions.

Performance Each student will be expected to *Demonstrate/Practice*. . .

- Determine the Limits of:
  polynomial functions
  products of polynomial functions
  quotients of polynomial functions;

Performance Each student will be expected to *Demonstrate/Practice*. . . (continued)

- Determine the Limits of (continued):
  trigonometric functions
  exponential functions
  logarithmic functions;

- Analyze the Continuity of Functions;

- Differentiate:
  polynomial functions
  products of polynomial functions
  quotients of polynomial functions
  trigonometric functions
  inverse trigonometric functions
  relations using implicit differentiation
  hyperbolic functions
  exponential functions
  logarithmic functions;

- Integrate by Applying a Change in Variable:
  indefinite integrals
  definite integrals;

- Apply the Operation of Differentiation to Problems Involving:
  slopes of tangents to a curve
  extreme evaluations
  concavity of a curve
  differentials of a relation;