

## Mathematics 1: Calculus I

Course # DMNS 1001

Credits 6

**Pre-requisites and Co-requisites:** Precalculus with a minimum grade of “B-” or 70/100.

### Course Description

Calculus 1 is a foundational course at UCA; it plays a significant role in the understanding of science, engineering, economics, and computer science, among other disciplines. This introductory calculus course covers limits, differentiation, and integration of functions of single variable with applications. This course is prerequisite to Calculus II for Computer Science.

### Course Learning Outcomes

Upon completion of this course, students should be able to:

- Calculate limits of single-variable functions to identify the behavior of the function at that point
- Determine the continuity and differentiability of a function to identify singular points and smoothness of the function
- Calculate derivatives of single-variable functions to determine the properties of the graph of the function
- Use derivative of a function to solve basic optimization problems
- Calculate indefinite integrals of single-variable functions to compute the definite integral and to solve differential equations
- Calculate definite integrals of single-variable functions to find the area under the curve, volume, and surface area of solid objects

### Course Assessments and Grading

Item	Weight
Homework	10%
Quizzes	20%
Group work and pair work	15%
Midterm Exam	25%
Final exam	30%