

## Calculus I

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**YEAR COURSE OFFERED:** Every

**SEMESTER COURSE OFFERED:** Fall

**DEPARTMENT:** Math

**COURSE NUMBER:** 2413

**NAME OF COURSE:** Calculus I

**NAME OF INSTRUCTOR:** Varies

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**The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.**  
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### Learning Objectives

Upon successful completion of this course, students will:

1. Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals.

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2. Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.

3. Determine whether a function is continuous and/or differentiable at a point using limits.

4. Use differentiation rules to differentiate algebraic and transcendental functions.

5. Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.

6. Evaluate definite integrals using the Fundamental Theorem of Calculus.

7. Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus.

### Major Assignments/Exams

Three tests and a cumulative final exam.

### Required Reading

Calculus: Single and Multivariable, 6th Edition

by Deborah Hughes-Hallett, Andrew M. Gleason, William G. McCallum, Eric Connally, Daniel E. Flath, Selin Kalaycioglu, Brigitte Lahme, Patti Frazer Lock, David O. Lomen, David Lovelock, Guadalupe I. Lozano, Jerry Morris, David Mumford, Brad G. Osgood, Cody L. Patterson, Douglas Quinney, Karen

### **Recommended Reading**

none

### **List of discussion/lecture topics**

- 1: A Library of Functions
- 2: Key Concept: The Derivative
- 3: Short-Cuts to Differentiation
- 4: Using the Derivative
- 5: Key Concept: The Definite Integral
- 6: Constructing Antiderivatives