



### Math 144 – Elements of Calculus with Applications for Business Course Syllabus

**Course description:** Limits and continuity, the derivative, the antiderivative, the definite integral, and applications.

**Credit hours:** 3

**Course Prerequisites and Corequisites:** MTH 143

**Course outline:**

	<u>Approximate time spent</u>
• <b>Derivatives</b>	30%
○ Limits and continuity	
▪ Informal definition of Limit – description of process	
▪ Continuity and Limits to infinity	
○ Definition of derivative and interpretations	
○ Derivative rules	
▪ Power of $x$ rule and linearity	
▪ Product and Quotient rules	
▪ Chain rule	
○ Combination of rules, higher derivatives, applications	
• <b>Applications and other derivative rules</b>	35%
○ Relative maxima and minima; curve sketching	
○ Concavity; points of inflection	
○ Optimization in business	
○ Curve sketching involving asymptotes	
○ More differentiation	
▪ Logarithmic and Exponential rules	
▪ Implicit differentiation	
• <b>Integration</b>	35%
○ Indefinite Integration	
▪ Anti-differentiation	
▪ The power, logarithmic and exponential rules	
▪ Business applications	
▪ Differential equations	
○ Definite Integration	
▪ Area under a curve and the Definite Integral	
▪ The Fundamental Theorem of Calculus	
▪ The area between two curves	
▪ Using tables of integrals / integration by parts	
▪ Improper integrals	

**Student Learning Outcomes (SLO):** At the end of MTH 144, a student who has studied and learned the material should be able to:

1. Find limits using graphs and algebraic techniques.
2. Recognize continuous functions.
3. Find derivatives and antiderivatives of algebraic functions, including compositions of functions.
4. Use implicit differentiation to solve related rates problems.
5. Use limits and derivative information to sketch graphs of functions and find extreme values of functions.
6. Use the Fundamental Theorem of Calculus to evaluate definite integrals.
7. Use definite integrals in probability and area computation problems.

MTH 144 – Elements of Calculus with Applications for Business  
Syllabus Continuation

*There are no specific program learning outcomes for this major addressed in this course. It is a general education core curriculum course and/or a service course.*