

MATH 1910 – Calculus I  
Competencies

The following items will be covered via lecture along with tests and quizzes:

1. The Limit Concept
  - A. Definition
  - B. Techniques for finding limits
  - C. Limits involving infinity
  - D. Continuity of functions and relation to limits
2. The Derivative of a Function
  - A. Definition
  - B. Rules of differentiation – fundamental, product, quotient, chain, implicit
  - C. Successive differentiation
  - D. Increments and differentials
3. Applications of the derivative
  - A. Related rates
  - B. Local (or relative) extrema
  - C. Absolute extrema
  - D. First and Second Derivative Tests and Concavity
  - E. Applications of extrema
4. The Integral Concept
  - A. The anti-derivative and indefinite integral with rules for finding them
  - B. Solving differential equations
  - C. The definite integral
    1. Definition and area concept
    2. Properties
    3. Fundamental Theorem of the Calculus
5. Exponential and Logarithmic Functions (as time permits)
  - A. General versus Natural
  - B. Differentiation formulas
  - C. Logarithmic Differentiation
  - D. Corresponding Integration with Applications