

## Calculus I for the Social Sciences

Mathematics 157

Section: D200

Term: 2010 Fall

Instructor:  
Natalia Kouzniak

### Discussion Topics: Calendar Description:

Designed for students specializing in business or the social sciences. Topics include: limits, growth rate and the derivative; logarithmic exponential and trigonometric functions and their application to business, economics, optimization and approximation methods; functions of several variables.

### Course Outline:

- Review
  - Cartesian coordinate system
  - Lines
  - Graphing functions
  - Transforming functions
  - Polynomial, rational, power, and absolute value functions
  - Algebra of functions
  - Inverse functions
  - Function models
- Limits and Continuity
  - Limits
    - One-sided limits
  - Continuity
- Differentiation
  - The Derivative
    - Basic rules of differentiation
    - The products and quotients rules
    - The chain rule
  - Visual Differentiation
  - Higher order derivatives
  - Implicit differentiation and related rates
  - Differentials and linear approximation
  - The Newton-Raphson method
- More Functions and Their Derivatives
  - Exponential and logarithmic functions
  - Differentiation of exponential and logarithmic functions
  - Trigonometric functions and their properties
  - Differentiation of trigonometric functions
- Applications of Differentiation
  - Applications of the first derivative
  - Applications of the second derivative
- Curve sketching
- Optimization I
- Finance
  - Simple interest
  - Compound interest
  - Increasing annuity
  - Decreasing annuity and amortization

Grading: Diagnostic Test - 5%

Paper Homework - 9%

Online Homework - 6%

Midterm 1 - 15%

Midterm 2 - 15%

Final Exam - 50%

## Calculus I for the Social Sciences

Required Texts: Applied Calculus for the Managerial, Life and Social Sciences  
First Canadian Edition -- 2nd Reprint  
By Tan, Menz and Ashlock  
Nelson Education  
ISBN: 0176609954

Recommended Texts:

Materials/Supplies:

Prerequisite/Corequisite:

Prerequisite: BC principles of mathematics 12 (or equivalent) with a grade of at least B; or MATH 100 with a grade of at least C, or achieving a satisfactory grade on the Simon Fraser University Calculus Readiness Test. Students with credit for either MATH 150, 151 or 154 may not take MATH 157 for further credit. Quantitative.

Notes: THE INSTRUCTOR RESERVES THE RIGHT TO CHANGE ANY OF THE ABOVE INFORMATION.

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester.

This outline is derived from a course outline repository database that was maintained by SFU Student Services and the University's IT Services Department. The database was retired in 2014 and the data migrated to SFU Archives in 2015.