This course is designed to prepare students for Business Calculus. Students will be provided with a rigorous study of algebraic, exponential and logarithmic functions, applications of matrices and geometric progressions as applied to compound interest and present value.

The times listed below indicate actual lecture hours spent on each topic. These do not include time spent on exams or other in-class activities.

**Limits and Continuity—3 hours**
- Limits
- Continuity
- Continuity applied to inequalities

**Differentiation—8 hours**
- Definition of the derivative
- Rules for differentiation
- Derivative as a rate of change
- Product and quotient rules
- Chain rule

**Applications of the derivative—8 hours**
- Derivatives of exponentials and logarithms
- Higher order derivatives
- Implicit differentiation
- Logarithmic differentiation
- Marginal analysis
- Elasticity of demand

**Curve Sketching—6 hours**
- Relative and absolute extrema
- First derivative test
- Concavity
- Second derivative test
Asymptotes (vertical, horizontal and oblique)
Optimization

**Integration—9 hours**
Differentials
Anti-derivatives and the indefinite integral
Basic integration rules
Integration by substitution
Fundamental Theorem of Calculus
Area
Definite integrals
Area between two curves

**Applications of Integration—8 hours**
Integration by parts
Partial fractions
Approximate integration and error analysis
Consumer’s and Producer’s Surplus
Average value
Present value
Annuities

**Multivariable Calculus—8 hours**
Functions of several variables
Partial derivatives
Higher order partial derivatives
Extrema for functions of two variables
Lagrange multipliers
Double integrals and area

**Optional Topics—As time permits**
Newton’s method
Related rates
Logistic growth
Integral Tables
Differential equations
Improper integrals
Implicit partial differentiation
Double integrals and volume

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The Math 262 final exam should ideally contain representative questions from each of the main (bold) categories with the possible exception of the optional topics. The criteria upon which the Core Assessment Committee evaluates the Math 262 finals are listed below.

1. Students have mastered the prerequisite material for the course.
2. Students master problem-solving skills.
3. Students learn to manipulate abstract symbols.
4. Students learn and appreciate the rigorous use of deductive arguments in mathematics.
5. Students learn a broad spectrum of mathematical applications:
   a) Limits and continuity
   b) Differentiation and integration
   c) Optimization problems for ordinary and multivariate functions
   d) Analysis of functions and their graphs
   e) Applications of derivatives and integrals, including chain rule
   f) Partial derivatives
   g) Lagrange multipliers
   h) Apply objectives a – g to business applications and concepts

To that end, a question is chosen from the final exam representing each of these twelve criteria and sub-criteria. It has often been the case in the past that one exam question served to cover more than one criterion. It is not our intention to create conditions leading to inordinately long or redundant final exams for the purpose of meeting Core Assessment Committee demands. However, Math 262 instructors should be aware of the criteria while preparing their final exams. All students are required to take the final exam in order to receive a grade other than F, and students must pass the final in order to receive a passing grade in the course (i.e. students must score a minimum of 60% on the final exam to receive C- or better).