

TROY UNIVERSITY
MTH 2201, Business Calculus

1. Course Listing, Number, Title, Number of Semester Hours:

MTH 2201, Business Calculus, (3)

2. Accurate Course Description:

An introduction to the basic ideas and techniques of differential and integral calculus, especially as they relate to problems involving maximum and minimum values of functions and marginal analysis.

Prerequisite: Placement or a grade of C or better in MTH 1112 or MTH 1114. NOTE: Credit will not count toward a major or minor in mathematics.

3. Course Textbooks, Manuals, or Required Materials:

Brief Calculus and Its Applications, by Larry Goldstein, David Schneider, David Lay, and Nakhle Asmar, 11th Edition, Pearson – Prentice Hall

4. Course Objectives:

Upon completion of this course, the student should be able to:

1. Differentiate algebraic, logarithmic, and exponential functions.
2. Interpret the geometric significance of the derivative.
3. Use First and Second Derivative Tests to find relative maxima and minima.
4. Sketch accurate graphs of functions, showing relative extrema, concavity, points of inflection.
5. Find the absolute maximum and absolute minimum values of functions (if they exist) on an interval.
6. Apply techniques of differentiation to maximum/minimum problems, marginal analysis problems, and approximations using differentials.
7. Compute anti-derivatives and definite integrals involving various algebraic, logarithmic, and exponential functions.
8. Use partial derivatives and LaGrange Multipliers in finding relative extrema of functions of several variables.
9. Compute double integrals.

Course Topics

I. Derivatives

1. Basic rules of differentiation
2. The geometric interpretation of the derivative
3. Product, Quotient, and Chain Rules

II. Applications of the Derivative

1. Marginal analysis and approximation using differential
2. Concavity
3. Curve Sketching
4. Absolute maximum and minimum values of a continuous function defined on a closed interval of finite length.
5. Applications involving extrema

III. Logarithmic and Exponential Functions

1. Properties and graphs.
2. Derivatives.

IV. Integration

1. Anti-derivatives
2. Applications
3. The Definite Integral
4. Area
5. Integration by Substitution

V. Functions of Several Variables

1. Partial Derivatives
2. Relative Extrema
3. LaGrange Multipliers
4. Double Integrals