

Course Outline for MATH 1267, Business Calculus

MATH 1267 Business Calculus (3 units)

Prerequisite: One of the following: Appropriate Math Placement, MATH 117, MATH 118, MATH 119, [MATH 1004](#), [MATH 1005](#), [MATH 1006](#), or [MATH 1007](#).

Limits, continuity, and differentiation of rational, exponential, and logarithmic functions.

Optimization and related rates. Introduction to integration. Partial differentiation and optimization of functions of several variables. Applications in business and economics. Not open to students with credit in MATH 141, [MATH 1261](#), or [MATH 1264](#). 3 lectures. Fulfills GE Area 2 with a grade of C- or better. Formerly MATH 221.

Course Learning Objectives	
1	Compute limits of functions and use them to determine if a given function is continuous or discontinuous at a particular point or on an interval.
2	Describe the meaning of a derivative and interpret the derivative in the context of business and economics.
3	Compute derivatives of rational, exponential and logarithmic functions, and combinations of these.
4	Solve problems involving related rates and optimization with an emphasis on applications in business and economics.
5	Describe exponential and logarithmic functions and their properties using the proper language and notation.
6	Model compound interest and exponential growth and decay using exponential functions.
7	Describe the meaning of the definite integral and compute definite integrals using both the definition and the Fundamental Theorem of Calculus.
8	Solve problems in the fields of business and economics using integration.
9	Compute partial derivatives of functions of several variables.

Expanded Course Content

Textbooks, materials, and/or other resources

Applied Calculus for the Managerial, Life, and Social Sciences, 9th Edition, by Soo T. Tan,
Learning

Week	Readings	Topics of Discussion
1	Sections 2.1, 2.2, 2.3	Functions and their graphs, the algebra of functions, functions and mathematical models
2	Sections 2.4, 2.5	Limits, one-sided limits and continuity
3	Sections 2.6, 3.1	The derivative, basic rules of differentiation
4	Sections 3.2, 3.3	The product rule and quotient rules, the chain rule
5	Sections 3.4, 3.5	Marginal functions in economics, higher-order derivatives
6	Sections 3.6, 4.1	Implicit differentiation and related rates, applications of the first derivative
7	Sections 4.2, 4.3	Applications of the second derivative, curve sketching
8	Sections 4.4, 4.5	Optimization
9	Sections 5.1, 5.2, 5.4	Exponential functions, logarithmic functions, differentiation of exponential functions
10	Sections 5.5, 5.6	Differentiation of logarithmic functions, exponential functions as mathematical models
11	Sections 6.1, 6.2	Antiderivatives and the rules of integration, integration by substitution

Week	Readings	Topics of Discussion
12	Sections 6.3, 6.4	Area and the definite integral, the Fundamental Theorem of Calculus
13	Sections 6.5, 6.6	Evaluating definite integrals, areas between two curves
14	Sections 6.7, 8.1	Applications of the definite integral to business and economics, functions of several variables
15	Sections 8.2, 8.3	Partial derivatives, maxima and minima of functions of several variables

Method of Assessment

The possible methods of assessment are written individual examinations, quizzes, in-class worksheets or presentations, projects, and homework. All exams are to be proctored in-person, and one or more midterms and a cumulative final exam are required.

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Instructional Mode

The instructional mode for this class is face-to-face. This designation means that the essential academic standards of the course require in-class student engagement, and thus remote instruction is not appropriate.