

LSU Dual Enrollment Program for Math

Math 1431 Business Calculus COURSE PROFILE 09-23-2026

LA BOARD OF REGENTS COMMON COURSE NUMBER: CMAT 2103 Applied Calculus

ETEXT: *Calculus for Business, Economics, Life, and Social Sciences, 14e Digital Update, MyLab Math*, Barnett, Ziegler, Byleen

HIGH SCHOOL COURSE CODE: 160504

CHAPTERS

1 – Functions and Graphs

2 – Limits and the Derivative

3 – Additional Derivative Topics

4 – Graphing and Optimization

5 – Integration

6 – Additional Integration

The number in parentheses indicates the number of homework exercises on that topic in MyLab Math.

Chapter 1: Equations, Inequalities, and Applications

Section 1.1 Functions (17)

Use points on a graph to identify input and output values

Evaluate functions

Find the domain of a function

Solve applications involving functions and their graphs

Section 1.3 Linear and Quadratic Equations (15)

Graph linear equations

Write the equation of a line given two points

Work with slope, y-intercept, and the slope-intercept form of a line

Write the equation of a line with a given slope and y-intercept

Find the intercepts, vertex, range, and maximum or minimum value of a parabola from its graph

Use the vertex form of a quadratic function to find information about its graph

Section 1.5 Exponential Functions (13)

Graph exponential functions

Describe transformations of the graphs of exponential functions

Use properties of exponential functions to solve equations

Solve applications involving exponential functions

Section 1.6 Logarithmic Functions (20)

Evaluate logarithms

Simplify logarithmic expressions

Solve logarithmic and exponential equations

Graph logarithmic functions

Solve applications involving logarithmic functions

Chapter 2: Limits and the Derivative

Section 2.1 Introduction to Limits (25)

Use the graph of a function to estimate limits and function values
Use the properties of limits to find limits algebraically
Sketch the graph of a function using limits and function values
Find the limit of a difference quotient

Section 2.2 Infinite Limits and Limits at Infinity (27)

Find infinite limits and limits at infinity using a graph
Find limits of rational functions
Find limits of functions at infinity
Describe the end behavior of a function
Find horizontal and vertical asymptotes
Solve applications involving limits and limits at infinity

Section 2.3 Continuity (17)

Sketch the graph of a function using limits and function values
Estimate function values and limits using the graph of the function
Use the continuity properties of functions to determine where a function is continuous
Use continuity properties to solve inequalities
Solve applications involving continuity

Section 2.4 The Derivative (18)

Find average and instantaneous rates of change
Use the four-step process to find the derivative of a function and evaluate the derivative
Use the graph of a function to determine whether the function is differentiable at a given x -value
Solve applications involving derivatives and rate of change

Section 2.5 Basic Differentiation Properties (30)

Use basic differentiation properties to find the derivative of a function
Find equation of tangent lines and values of x for the line tangent to a function is horizontal
Solve applications involving derivatives
Find velocity functions from position functions, find velocities and times when the velocity is 0.

Section 2.7 Marginal Analysis in Business and Economics (15)

Find marginal cost, marginal average cost, revenue, and profit functions.
Solve applications involving cost, revenue, and profit functions

Chapter 3: Additional Derivative Topics

Section 3.1 The Constant e and Continuous Compound Interest (13)

Evaluate and graph continuous compound interest functions
Solve applied problems involving compound interest
Solve applications involving continuous compound interest.

Section 3.2 Derivatives of Exponential and Logarithmic Functions (15)

Find derivatives involving exponential and logarithmic functions
Find equations of lines tangent to graphs at particular values

Solve applications involving derivatives of exponential and logarithmic terms

Section 3.3 Derivatives of Products and Quotients (30)

Find derivatives of products

Find derivatives of quotients

Find the equation of a tangent line to the graph of a product or quotient function

Find the x -value at which the derivative of a function is zero

Solve applications involving derivatives of products and quotients

Section 3.4 The Chain Rule (34)

Work with composite functions

Find derivatives of composition functions

Find tangent lines to the graph of a composition function

Solve applications involving derivatives that require the chain rule

Section 3.7 Elasticity of Demand (10)

Find the elasticity of demand

Determine whether demand is elastic, inelastic, or has unit elasticity

Find values for which demand is elastic and inelastic

Solve applications involving the elasticity of demand

Chapter 4: Graphing and Optimization

Section 4.1 First Derivatives and Graphs (29)

Find intervals on which functions are increasing and decreasing

Find local extrema

Use or create sign charts for graphs of functions

Find critical numbers of functions

Sketch graphs of functions

Solve applications involving the graph of a function's first derivative

Section 4.2 Second Derivatives and Graphs (19)

Identify particular intervals of graphs of functions

Find inflection points

Graph function given descriptions of the first and second derivative of the function

Find the derivative of functions

Find inflection points and determine concavity algebraically

Use curve sketching techniques

Solve applications involving the graph of a function's second derivative

Section 4.5 Absolute Maxima and Minima (18)

Find absolute extrema given the graph of a function

Find absolute extrema of a function

Find the absolute extrema of a function on a given interval

Section 4.6 Optimization (15)

Optimize the product of two numbers

Solve area and perimeter optimization problems

Solve geometric optimization problems

Solve applications involving optimization

Chapter 5: Integration

Section 5.1 Antiderivatives and Indefinite Integrals (24)

Find indefinite integrals

Find particular antiderivatives

Solve applications involving antiderivatives and indefinite integrals

Section 5.2 Integration by Substitution (21)

Reverse the chain rule to find indefinite integrals

Use the method of substitution to find antiderivatives and indefinite integrals

Find the family of all antiderivatives of a derivative

Solve applications involving antiderivatives that require substitution

Section 5.4 The Definite Integral (14)

Identify rectangles under curves

Graph and identify areas by left and right sums

Calculate Riemann sums

Use properties of the definite integral

Section 5.5 Fundamental Theorem of Calculus (25)

Compare changes in a function with the area under the graph of the function's derivative

Evaluate integrals using the Fundamental Theorem of Calculus

Find average values of functions over intervals

Solve applications involving definite integrals and the Fundamental Theorem of Calculus

Chapter 6: Additional Integration

Section 6.1 Area between Curves (20)

Set up a definite integral to represent a shaded area

Find the area between two curves

Solve applications involving finding the Gini index

Section 6.2 Applications (8)

Solve continuous income stream problems

Find the future value of a continuous income stream

Solve consumers' and producers' surplus problems