



MATH 010: Business Calculus I

General Information

Term: 2020 Summer Session	Class Sessions Per Week: 5
Instructor: Staff	Total Weeks: 5
Language of Instruction: English	Total Class Sessions: 25
Classroom: TBA	Class Session Length (minutes): 120
Office Hours: TBA	Credit Hours: 4

Course Description:

This course introduces standard calculus for business courses. Designed for business major students with a college algebra background, this course will focus on the use of derivatives and integrals of linear and non-linear functions, fundamental calculus theory, derivative test and optimization in solving problems in business and economics, e.g., maximizing profit, calculating average investment income, future value of an income stream, and consumers' surplus. Limits and continuity, probability and statistics will also be covered.

Course Materials:

Textbook:

Calculus Concepts: An Informal Approach to the Mathematics of Change, Donald R. LaTorre et al., 5th Edition, 2013

Calculator:

The **TI-84 (TI-84 Plus)** calculator is required.

Course Format and Requirements:

This course includes lectures, discussions and in-class discussions. You are responsible for all material and information from class. Attendance is required. Three or more unexplained absences will lower your final grade.

Course Assignments:

Homework

Homework exercises should be done by the next class after they are assigned. It's important to finish all assigned homework because some of the questions on exams and quizzes will be based on homework exercises.

Quizzes

There will be 6 quizzes administered through the whole semester and the lowest scores will be dropped. Quizzes will always be completed in the first ten minutes of class. Quizzes



will tend to cover topics covered in the lecture as well as topics covered in the homework. There will be no make-up quizzes.

Midterm Exams

There will be two midterm exams in this course. The midterm exam will be based on concepts covered in class. It will be in-class, close-book and non-cumulative.

Final Exam

The final will be cumulative and close-book. Note that the final will not be taken during the normal class times. Exact time and location for final will be announced later.

Course Assessment:

Quizzes	15%
Homework	10%
Midterm Exams 1	20%
Midterm Exams 2	20%
Final Exam	35%
Total	100%

Grading Scale (percentage):

A+: 98-100

A: 93-97

A-: 90-92

B+: 88-89

B: 83-87

B-: 80-82

C+: 78-79

C: 73-77

C-: 70-72

D+: 68-69

D: 63-67

D-: 60-62

F: <60

Academic Integrity:

Students are encouraged to study together, and to discuss lecture topics with one another,



but all other work should be completed independently.

Students are expected to adhere to the standards of academic honesty and integrity that are described in the Wuhan University's Academic Conduct Code. Any work suspected of violating the standards of the Academic Conduct Code will be reported to the Dean's Office. Penalties for violating the Academic Conduct Code may include dismissal from the program. All students have an individual responsibility to know and understand the provisions of the Academic Conduct Code.

Special Needs or Assistance:

If you have a disability or any other reason that put you in need of academic accommodations, please contact the administrative office as soon as possible for more information and initiate the process for accessing academic accommodations. Students with need of academic accommodation are encouraged to discuss with instructor for a better assistance during the summer session.

Course Schedule:

Class 1

Course Overview;

Go through Syllabus;

Function;

Continuity;

Limits;

Class 2

Average rate of change;

Using the TI-84

Tangent line and the derivative;

Class 3

Differentiability

Numerical Derivatives;

Graphical Derivatives;

Class 4

Quiz 1

Algebraic Derivatives

Linear & Quadratic Functions;

Use supply, demand, revenue, cost, and profit terminology in constructing and evaluating functions;

Class 5

Exponential Functions;



Continuously Compounded Interest
Derivatives of Exponential Functions;

Class 6

Quiz 2

Logarithm Functions;
Second-Order Derivative;
Higher- Order Derivatives

Class 7

Limit definition of the derivative;
Numerical & Graphical Limits;
Algebraic Limits;
More Deriv. Rules

Class 8

Midterm Exam 1

Class 9

Marginal Analysis;
Chain rule;
Product & Quotient Rules

Class 10

Marginal Revenue, Marginal Cost, Marginal Profit
Optimization Critical points, Relative and Absolute Extreme points

Class 11

Quiz 3

Max/Min Applications;
First Derivative Test;
Second derivative and concavity Second Derivative Test

Class 12

Inflection Points;
Point of diminishing returns;
Optimization using the calculator;
Finding inf. pts. with the TI-84

Class 13

Quiz 4

The general anti-derivative;
Finding a specific anti-derivative;



Word problems on antiderivatives

Class 14

The Indefinite Integral;
Integration with Initial Conditions

Class 15

The definite integral;
Accumulated Change;
Properties of the definite integral

Class 16

Midterm Exam 2

Class 17

Fundamental Theorem of Calculus;
Techniques of Integration
More Integration Formulas;
Interpreting definite integrals

Class 18

Area under a curve, Area approximation by rectangles;
Consumers' and Producers' Surplus

Class 19

Quiz 5

Average value of a function;
Average value of the rate of change;
Continuous income streams, and average value

Class 20

Differentials;
Antiderivative Review;
Integration by u-substitution
Basic Concepts of Probability;

Class 21

Conditional Probability;
Independent Events;
Bayes' Formula

Class 22

Quiz 6



Permutations and Combinations;
Applications of Counting
Binomial Probability;
Markov Chains;

Class 23
Probability Distributions;
Expected Value;
Decision Making
Frequency Distributions;

Class 24
Measures of Central Tendency;
Measures of Variation;
Normal Distributions;
Binomial Distributions

Class 25
Wrap-up
Review for final

Final Exam (Cumulative): TBA