



INTRODUCTION to CALCULUS 50

Insert Teacher Name

Insert Room Number

Insert Full Year/Semester

Insert Period

Insert Email Address

COURSE DESCRIPTION

Introduction to Calculus 50 course is designed for the student who has completed Pre-Calculus and wishes to be introduced to a college calculus experience. To be successful, students must be motivated learners who have mathematical intuition, a solid background in the topics studied in previous courses and the persistence to grapple with complex problems. The critical areas of focus for this course will be in three areas: (a) functions, graphs and limits, (b) differential calculus (the derivative and its applications), and (c) integral calculus (anti-derivatives and their applications).

- 1) Students will build upon their understanding of functions from prior mathematics courses to determine continuity and the existence of limits of a function both graphically and by the formal definitions of continuity and limits. They will use the understanding of limits and continuity to analyze the behavior of functions as they approach a discontinuity or as the function approaches $\pm\infty$.
- 2) Students will analyze the formal definition of a derivative and the conditions upon which a derivative exists. They will interpret the derivative as the slope of a tangent line and the instantaneous rate of change of the function at a specific value. Students will distinguish between a tangent line and a secant line. They will learn formulas and techniques to enable them to differentiate algebraic, trigonometric, inverse trigonometric, inverse, exponential and logarithmic functions. Students will apply the derivative to analyze optimization problems, related rates problems and position functions.
- 3) They will analyze integrals by evaluating areas under the curve. Students will use the Fundamental Theorem of calculus to evaluate Integrals using anti-derivatives. They will apply integrals to problems involving area, velocity, acceleration. Lastly, students will learn techniques to integrate using substitution.

COURSE OBJECTIVES

Students should understand:

- Formal definitions and graphical interpretations of limits and continuity
- Formal definition, application and properties of a derivative.
- Formal definition, application and properties of an integral.
- Calculus can be used to extend our mathematical boundaries.
- Calculus is the study of change.

UNITS OF STUDY

- Preparing for Calculus
- Limits, Graphs, and Function
- Differentiation
- Applications of the Derivative
- Exponential and Logarithmic Functions
- Integration and its Applications

COURSE POLICIES AND REQUIREMENTS

GRADING

Summative Assessments:	Insert % Here (Minimum of 70%). Insert Categories/Weighting (ie. Papers – 30%)
Formative Assessments:	Insert % Here (Maximum of 30%). Insert Categories/Weighting (ie. Quizzes – 50%)
Behavioral Characteristics:	Insert % Here (Maximum of 10%). Insert Categories/Weighting (ie. Particip. - 90%)
Insert Additional Grading Information Here	

MATERIALS

Insert Course Materials Here (ie. Textbook, Binder, Calculator, Highlighters)

EXPECTATIONS OF STUDENTS

Insert Course Expectations Here

EXTRA HELP

Insert Course Expectations Here

Insert Additional Information Here