11012 Intuitive Calculus (3 credits)

Acquire critical thinking and problem solving skills

Analyze the limit behavior of a function at a point in its domain to determine if the function is continuous at that point.

Determine intervals in which a function is continuous. Analyze and classify the discontinuities of a function.

Find the derivative of a function by identifying and applying the appropriate derivative formula.

Interpret the derivative as a rate of change.

Solve applied problems including marginal analysis applications.

Find indefinite integrals using integration formulas and the method of substitution.

Understand the use of the Fundamental Theorem of Calculus to evaluate definite integrals.

Apply principles of effective written and oral communication

Interpret the derivative as a rate of change.

Explain the relationship between marginal cost and average cost

For a given supply and demand functions find and interpret the consumer's surplus and the producer's surplus.

Cultivate their natural curiosity and begin a lifelong pursuit of knowledge

Use the limit definition of the derivative to determine the existence and to find the derivative of a given function.

Solve applied problems including marginal analysis applications.

Understand the use of the Fundamental Theorem of Calculus to evaluate definite integrals.

Determine the present value and future value for an investment with interest compounded continuously.

Strengthen quantitative reasoning skills.

Determine limits analytically, numerically and graphically including one-sided limits and limits at infinity.

Find the slope of the tangent line to the graph of a function at a given point.

Find and classify relative extrema and, on a closed interval, absolute extrema of a function.

Interpret the derivative as a rate of change.

Use definite integrals to calculate the area of the region under a curve and the area of the region between two curves.

Understand the use of the Fundamental Theorem of Calculus to evaluate definite integrals.

Understand basic concepts of the academic discipline

Determine limits analytically, numerically and graphically including one-sided limits and limits at infinity.

Find higher order derivatives.

Use the first derivative to determine intervals on which the graph of a function is increasing or decreasing and to determine critical points of the function.

Use the second derivative to determine intervals on which the graph of a function is concave upwards or concave downwards and to determine points of inflection.

Interpret the derivative as a rate of change.

Construct antiderivates analytically.

Identify integrals of functions as the areas of regions between the graph of the function and the x-axis.

Understand the use of the Fundamental Theorem of Calculus to evaluate definite integrals.