MATH 205 General Calculus and Linear Algebra

Catalog Description: (3) II. Introduction to calculus and linear algebra concepts that are particularly useful to the study of economics and business administration with special emphasis on working problems.

Prerequisites: MATH 100 with C or better grade (College Algebra in the preceding semester is recommended).

Textbook: *Applied Calculus*, Hughes and Hallett *et al.* Wiley and Sons, Second Edition.

Course Objectives: Cover the basic theorems and concepts of differential and integral calculus and linear algebra with emphasis on applications to business and economics.

Sessions: Three hours of lecture/recitation per week.

Chapter	Topics	Sessions
1	What is a Function?	1
	Linear Functions	1
	Applications of Functions to Economics	1
	Proportionality and Power Functions	1
	Exponential Functions	1
	Continuous Growth and the number *e*	1
	The Natural Logarithm	1
	Exponential Growth and Decay	1
	New Functions from Old	1
	Polynomials	1
2	Intantaneous Rate of Change	1
	The Derivative at a Point	1
	The Derivative Function	1
	Interpretations of the Derivative	1
	Marginal Cost and Revenue	1
4	Derivative Formulas for Powers and Polynomials	1
	Exponential and Logarithmic Functions	1
	The Chain Rule	1
	The Product and Quotient Rules	1
5	Local Maxima and Minima	1
	Inflection Points	1
	Optimization: Profit and Revenue	1
	Average Cost	1
	Elasticity of Demand	1
	Logistic Growth	1
	The Surge Function and Drug Concentration	1
7	Understanding Functions of Two Variables	1
	Contour Diagrams	1
	Partial Derivatives	1
	Computing Partial Derivatives Algebraically	1
	Critical Points and Optimization	1

	Constrained Optimization	1
A2	Systems of Linear Equations: Substitution; Elimination	1
	Systems of Linear Equations: Matrix Method	1
	Systems of m Linear Equations Containing n Variables	1
	Matrix Algebra	2
	Multiplication of Matrices	2
	Inverse of a Matrix	2
Reviews		5
Total		46