Version Date: 2006-52
03/22/2006

DELAWARE TECHNICAL & COMMUNITY COLLEGE

Campus:	Stanton
Department:	Mathematics/Physics
Course Number and Name:	MAT 261 - Business Calculus I
Prerequisites:	MAT 153 - College Math and Statistics, MAT 181 - College Algebra & Trigonometry Permission from the Math Department
Course Hours and Credits:	4:0:4
Course Description:	Content includes solving mathematical models of real world phenomena including function, graphs, limits, continuity, and the use of derivative to solve problems involving business management and computer science applications.
Materials:	Each student is required to have a graphing calculator, suitable for statistical tests. The Math Department strongly recommends TI 83 PLUS graphing calculator or later model.
Method of Instruction:	Lecture
Manuals:	None

Core Course Performance Objectives:

The student will be able to:

1. Solve mathematical applications involving functions. (CCC 2, 7)
2. Graph functions to solve mathematical applications. (CCC 2, 6, 7))
3. Demonstrate understanding of the concepts of limits and continuity. (CCC 2, 7)
4. Use derivatives to solve problems in business management. (CCC 2, 6, 7)
5. Use derivatives to solve computer science applications. (CCC 2, 6, 7)

Measurable Objectives:

1. Solve mathematical applications involving functions. (CCC 1, 2,3)

1.1 Simplify exponential, radical and rational expressions.
1.2 Graph functions.
1.3 Find equations of a line by the slope-intercept and point slope methods.
1.4 Evaluate functions.
1.5 Calculate the limits of algebraic functions using properties of limits.
1.6 Determine whether a function is continuous.
1.7 Use functional models to solve applications problems.

2. Graph functions to solve mathematical applications. (CCC 3, 4)

2.1 Compute the derivative of a function by using the limit definition.
2.2 Find the derivative of a function using the rules of differentiation.
2.3 Use the chain rules to differentiate a function.
2.4 Find higher order derivatives.
2.5 Differentiate functions implicitly.
2.6 Find rates of change: velocity, marginal profit, marginal revenue and marginal cost.

3. Demonstrate understanding of the concepts of limits and continuity. (CCC 3, 4)

3.1 Determine whether a given function is increasing, decreasing, concave upward, and concave downward.
3.2 Find relative and absolute extrema over a specified interval.
3.3 Use differentiation to solve optimization problems in business and economics.

4. Use derivatives to solve problems in business management. (CCC 3, 4)

4.1 Simplify exponential and logarithmic expressions.
4.2 Solve exponential and logarithmic equations.
4.3 Differentiate exponential and logarithmic equations.
4.4 Solve application problems involving exponential and logarithmic functions.

5. Use derivatives to solve computer science applications. (CCC 3, 4)

5.1 Define and evaluate functions of two variables.
5.2 Apply partial differential to solve problems with functions of two variables.
5.3 Solve business and economic problems involving functions of two variables.

EVALUATION CRITERIA

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The grade will be determined using the College Grading System:

92 – 100	A
83 – 91	B
75 – 82	C
0 – 74	R

Students should refer to the Student Handbook for further information on Academic Standing Policy, Academic Honesty Policy, Student Rights and Responsibilities and other policies relevant to their academic progress.