PRE-CALCULUS FOR BUSINESS
MATH 1165

1. Catalog Description

This course is directed to the needs of the business major. Topics include: polynomial and rational functions and graphs, exponential and logarithmic functions, systems of equations and matrices, linear programming, and introduction to calculus.

2. Goals

A. To increase the student's ability to express mathematical business problems using written and verbal skills.
B. To understand and interpret information given by a graph or in a textbook.
C. To show how developments in mathematics lead to solutions of business problems.
D. To develop an ability to use quantitative reasoning to solve practical business problems, particularly optimization problems.
E. To show how to solve business problems with relevant software, such as Excel.
F. To use calculators for graphing and for solving systems of linear equations.

3. Procedures

A. Lecture/Discussion
B. Daily reading of the textbook and homework assignments with in-class discussion of solutions.
C. Computer labs using Excel or other relevant software.
D. Students will be able to express mathematical concepts and solutions to business problems in writing by producing reports based on computer labs.
E. Problem Solving/Group Problem Solving.

4. Course Content

A. Equations
1. Linear Equations
2. Quadratic Equations

B. Applications of Equations & Inequalities
1. Applications of Equations
2. Linear Inequalities
3. Applications of Inequalities

C. Functions & Graphs
1. Functions (Various Models)
2. Combinations of Functions
3. Graphs in Rectangular Coordinates

D. Linear Functions, Quadratic Functions and Exponential Functions
1. Graphs

2. Applications

E. Systems of Linear Equations and Matrices

1. Solutions to systems of equations
2. Gauss-Jordan elimination method
3. Applications
4. Matrices: Operations and Applications (Calculators)

F. Linear Programming

1. Graphing Linear Inequalities
2. Simplex Method
3. Optimization Problems
4. Duality (Minimization and Maximization)

5. Evaluation Methods

A. Quizzes. Quizzes will be given as necessary.
B. In-class examinations and a comprehensive final exam.
C. Computer labs. Students will write reports based on computer explorations of mathematical problems in the business world.

6. Bibliography

Required Text: Harshbarger, Ronald J., Reynolds, James J., Mathematical Applications for the Management, Life, and Social Sciences, 6th Ed., Houghton Mifflin Company, Boston, Mass. 2000.

Bierman, Harold Jr., & Hausman, Warren H., Quantitative Analysis for Business Decisions, 6th Ed., Irwin, Homewood, Ill., 1987.

Fairlow, Stanley J. & Haggard, Gary M., Applied Mathematics for Management, Random House, Cambridge, Mass., 1988.

Haeussler, Ernest Jr., & Paul, Richard S., Introductory Mathematical Analysis, 6th Ed., Prentice Hall, Englewood Cliffs, N.J., 1991.

Lial, Margaret L., & Hungerford, Thomas W., Mathematics with Applications, 7th Ed., Addison-Wesley, Reading, Mass, 1999.

Williams, Walter E. & Ree, James H., Fundamentals of Business Mathematics, 4th Ed., Wm. Brown Publishing Co., Dubuque, Ia., 1987.

7. Software

A. Matlab, Version 5.2, The Math Works Inc., Natik, Mass., 1998.
B. Microsoft Excel 97, Microsoft Corporation, Redmond, Wa., 1997.