Inter American University of Puerto Rico
Metropolitan Campus
Faculty of Economics and Administrative Sciences
School of Economics

Syllabus

I. General Information

Course Title: Foundations of Quantitative Methods
Code and Number: MAEC 2140
Credits: 3 Credits
Academic Term:
Professor:
Office Hours:
Phone Number:
E-mail address:

II. Course Description:

Application of mathematics in business administration. Discussion of the variable concepts, joint theory, linear and quadratic functions, linear models, and exponential in logarithmic functions. Use of linear equation and inequation systems, matrices, and linear programming in problem solving. Prerequisite: GEMA 1200.

III. Objectives:

At the end of the course, the student will be able to:

1. Apply basic mathematical concepts in business administration.
   1.1 Define the following concepts: variables, discrete variables, continuous, constant, parameters, sums, and factorials.
   1.2 Determine the union and intersection between 2 or more sets.
   1.3 Determine the subset of a given set.
   1.4 Apply Venn diagram to solve a set related to business.

2. Analyze linear and quadratic functions in business
   2.1 Define a linear function.
   2.2 Draw linear graph related to business.
   2.3 Draw linear graphs using the concepts of slope and y-intercept.
   2.4 Solve linear equations for supply, demand and marginal cost analysis.
   2.5 Solve simple interest.
   2.6 Solve quadratic functions and their application.

3. Apply concept for exponential and logarithmic functions.
   3.1 Calculate increase and decrease in exponential and logarithmic function.
   3.2 Determine compound interest and continuous compound interest.
3.3 Calculate annuities and amortization.
3.4 Interpreted marginal cost analysis.
3.5 Extrapolate future and present value in exercises applied to business.

4. Evaluate linear models related to problem solving in business administration.
4.1 Apply the following methods: matrices, determinants, and Cramer Rule.
4.2 Apply supply and demand concepts as is related to equilibrium points.
4.3 Apply the concept of linear programming imposing a business problem.
4.4 Interpret a graphic model for systems of linear equations and inequalities applied to business problems.

IV. Course Content:

A. Basic mathematical concepts.
   1. Elements of a mathematical model for business administration.
   2. Definitions: variable, constant, parameter, statistical, coefficient, discrete, continuous, sum, factorial, independent, dependent.
   3. Concepts about sets: definitions, relationships, subsets, union, interception, compliment, mutually exclusive, Venn diagram.

B. Linear and Quadratic functions and their application:
   1. Definitions of: Cartesian coordinate plane, coordinate pairs, domain, range, slope, y-intercept, and linear functions.
   2. Solve linear equations on 2 variables.
   3. Solve applications for supply and demand, equilibrium point, and marginal cost analysis.
   4. Quadratic functions and their application.

C. Exponential and logarithmic function and their application:
   1. Definitions: Exponential function and logarithmic function.
   2. Finance math: Simple interest, compound interest, continuous compound interest, annuities, amortization, future value, and present value.

D. Linear Models:
   2. Basic concepts of Linear Programming: graphic methods.

V. Activities:
   The professor will use different teaching methodologies throughout the academic term such as:
   1. Conferences
   2. Applications exercises
   3. Use of the calculator
   4. Internet searches
   5. Application programs like Excel
   6. Case studies of business situations
VI. Assessment activities:
The professor will use different assessment methodologies throughout the academic term such as:
1. Quizzes
2. Tests
3. Application problems and cases studies
4. Portfolio

VII. Textbook:

VIII. Resources:
A. Other suggested textbooks:

B. Electronic Resources:
1. Función lineal
   
   
   revisado el 22 de mayo de 2007

2. Apuntes de El Prisma
   
   
   revisado el 22 de mayo de 2007

3. Función Lineal
   
   
   revisado el 22 de mayo de 2007

4. Definición de Conceptos, Apuntes Matemáticos
5. Interés Compuesto

http://www.educar.org/comun/calcudadoras/interescompuesto.asp
revisado el 22 de mayo de 2007

6. La Fórmula Cuadrática

http://ciencias.bc.inter.edu/ccaiseda/egma/cuadratica_files/slide0001.htm
revisado el 22 de mayo de 2007

IX. Evaluation:
1. Quizzes
2. Partial Exams
3. Final Exam
4. Portfolio (includes exercises, word problems, and case studies)

X. Bibliography:
1. Función lineal
   revisado el 22 de mayo de 2007

2. Apuntes de El Prisma
   revisado el 22 de mayo de 2007

3. Función Lineal
   revisado el 22 de mayo de 2007

4. Definición de Conceptos, Apuntes Matemáticos
XI. revisado el 22 de mayo de 2007

5. Interés Compuesto

http://www.educar.org/comun/calculadoras/interescompuesto.asp
revisado el 22 de mayo de 2007

6. La Fórmula Cuadrática

http://ciencias.bc.inter.edu/ccaiser/egma/cuadratica_files/slide0001.htm
revisado el 22 de mayo de 2007

7. Ecuaciones Cuadráticas

http://ciencias.bc.inter.edu/NTORO/ecuadw.htm
revisado el 22 de mayo de 2007

XII. Special Notes:

Any student in need of special services or assistance should request them at the start of the course or as soon as he/she learns about the need by registering at the office of the Coordinator of Services for Students with Disabilities located at the University Orientation Program in charge of Mr. Jose A. Rodriguez  (787) 250-1912 Ext. 2306 and 2307.

Lack of honesty, fraud, plagiarism and any other inadequate behavior related to the academic endeavor constitute major infringements sanctioned by the General Student Manual. Major infringements, as stated by the General Student Manual, may result in a suspension for more than a year or the permanent expulsion from the university, among other sanctions.

Revised Dr. M. Varas 08/2009