Syllabus

Course. Business Math I, Math 1324, Section 103, Fall 2009, MWF8:30–9:20, Pellegrino Hall 112.

Instructor. Dr. David Milovich, Assistant Professor, Dept. of Engineering, Mathematics, and Physics, david.milovich@tamiu.edu.

Office. Canseco Hall, 313C. Phone: (956) 326-2570. Hours: M10–11, T2:30–4, W11–12, R9:30–11, F10–11, or by appointment.

Course description. Systems of linear equations and matrices; linear programming; mathematics of finance; limits, continuity, derivatives. Prerequisite: One or more of an ACT Mathematics score of 25 or above, an SAT Mathematics score of 600 or above, a COMPASS score of College Algebra 35 or Algebra 81 or above, or MATH 1314.

Student learning outcomes. Upon successful completion of this course, the student will be able to:

- Set up and solve problems involving simple and compound interest, as well as future and present values of an annuities.

- Solve systems of linear equations using Gauss-Jordan elimination.

- Set up and solve linear optimization problems—maximization problems, minimization problems, and mixed constraint problems—using graphical methods and the simplex method.

- Apply basic concepts from calculus, such as limit, continuity and the physical and geometrical interpretation of derivatives to solve problems in business and economics.

- Set up and solve problems that use derivative techniques such as the product, quotient and chain rules.

Textbook. *College Mathematics for Business, Economics, Life Sciences and Social Sciences.* Eleventh Edition. Raymond A. Barnett, Michael R. Ziegler and Karl E. Byleen. Prentice Hall. ISBN-10: 0-13-157225-3, ISBN-13: 978-0-13-157225-6.

Homework. There will be homework each week, unless there is an exam coming up. Some homework assignments will be submitted electronically (through ANGEL). The electronic homework problems will generally be multiple choice or ask for numerical answers. The other homework assignments are for you to complete on paper. For paper assignments and for paper exam problems, your submitted solutions should include final answers and an organized presentation of the nontrivial steps you used to reach those answers. If you get the right answer but use a wrong step to get there, you probably won't receive full credit.

Also, it's a good idea to initially solve problems on scratch paper and then write up more organized solutions. Finally, if you're not sure whether a step is trivial enough that you don't need to write it down in your submitted solution, ask yourself these questions. 1) Does the professor usually skip this kind of step in his lectures? 2) Was this step easy enough to do in my head, or did I need to write some things down?

Calculators. Calculators and/or computers may be used for homework assignments. Some homework questions will require numerical answers that are very difficult to compute by hand. However, such questions will not appear on the midterm or final exams. For these exams, calculators are not required and are *not permitted*.

Exams. There will be two midterm exams and a final exam. The final exam will be comprehensive.

- Midterm I, in class, September 23.

- Midterm II, in class, November 2.

- Final Exam, December 11, 8AM.

Grading. Components: Homework 20%; Midterm I 25%; Midterm II 25%; Final Exam 30%. Final letter grade, given a final score of x%: A: $x \geq 90$; B: $80 \leq x < 90$ C: $70 \leq x < 80$; D: $60 \leq x < 70$; F: $x < 60$.

Approximate Schedule of Topics

24-Aug	syllabus; review Chapters 1 & 2
26-Aug	simple and compound interest
28-Aug	future value of income streams
31-Aug	present value of income streams
2-Sep	review systems of two equations
4-Sep	augmented matrices
7-Sep	Gauss-Jordan
9-Sep	Gauss-Jordan
11-Sep	matrix algebra
14-Sep	matrix inverse
16-Sep	matrix equations
18-Sep	Leontief input-output analysis
21-Sep	review
23-Sep	Midterm I
25-Sep	2-variable inequalities
28-Sep	systems of linear inequalities
30-Sep	geometric 2D linear programming
2-Oct	simplex
5-Oct	simplex
7-Oct	simplex
9-Oct	simplex
12-Oct	limits
14-Oct	limits
16-Oct	continuity
19-Oct	limits involving infinity
21-Oct	definition of derivative
23-Oct	basic derivative properties
26-Oct	linear approximation
28-Oct	marginal analysis
30-Oct	review
2-Nov	Midterm II
4-Nov	derivative of exponentials, logarithms
6-Nov	product and quotient rules
9-Nov	chain rule
11-Nov	chain rule
13-Nov	implicit differentiation
16-Nov	implicit differentiation
18-Nov	related rates
20-Nov	related rates
23-Nov	elasticity
30-Nov	review
2-Dec	review