

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Mathematics</u>
COURSE RUBRIC AND NUMBER	<u>MATH 1324</u>
COURSE TITLE	<u>Mathematics for Business & Social Sciences (CF) (MNS)</u>
COURSE CREDIT HOURS	<u>3 3 :</u> <u>0</u>
	Credits Lec Lab

I. Catalog Description

The application of common algebraic functions, including polynomial, exponential, logarithmic, and rational, to problems in business, economics, and the social sciences are addressed. The applications include mathematics of finance, including simple and compound interest and annuities; systems of linear equations; matrices; linear programming; and probability, including expected value. **Prerequisite:** Placement at college-level Mathematics by TSIA2 or equivalent; OR completion of NCBM 0124 with a "CR" or NCBM 0324 with a "C" or better; OR concurrent enrollment in NCBM 0124 or NCBM 0324. (3:0).

II. Course Objectives

Upon completion of this course the student will comprehend some of the great ideas of mathematics, and will be able to demonstrate this understanding:

- A. Unit I Linear Equations and Functions.
1. Solve linear equations in one variable.
 2. Solve applied problems by using linear equations.
 3. Determine whether a relation is a function, state the domains and ranges of certain functions, use function notation, perform operations with functions, and find the composite of two functions.
 4. Graph linear functions, find the slope of a line, and write the equation of a line.)
 5. Solve systems of linear equations of 2×2 .
 6. Solve systems of linear equations 3×3 .
 7. Find marginal profit, revenue, and cost.
 8. Given sufficient information, find the equation of linear total cost, total revenue and profit functions.
 9. Solve problems involving break-even analysis.
 10. Solve problems involving market equilibrium.
- B. Unit II Special Functions and Matrices.
1. Solve problems involving market equilibrium.
 2. Solve quadratic equations.
 3. Graph quadratic functions.
 4. Find market equilibrium by using quadratic supply and demand functions.

5. Find break-even points by using quadratic cost and revenue functions.
6. Maximize quadratic revenue and profit functions.
7. Graph and apply basic functions including constant, polynomial, rational, absolute value, and piecewise function.
8. Organize and interpret data stored in matrices.
9. Add and subtract matrices.
10. Multiply matrices.
11. Use elementary row operations to solve a system of equations (up to three unknowns).
12. Find the inverse of a square matrix.
13. Use the inverse of a matrix to find the solution of a system of equations (up to three unknowns).
14. Use Leontiff models to solve input-output problems.

C. Unit III Exponential and Logarithmic Functions; Mathematics of Finance.

1. Graph exponential and Logarithmic functions
2. Convert equations from exponential form to logarithmic form and vice versa.
3. Use properties of logarithmic functions to simplify expression-involving logarithms.
4. Solve exponential growth or decay problems when sufficient information are given.
5. Solve exponential and logarithmic equations representing cost, revenue, supply, and demand.
6. Find the compounded amount and interest where money is invested compounded at regular intervals or continuously.
7. Find the effective rate of interest if money is invested at compounded interest.
8. Find specified terms and sums of specified numbers of terms of arithmetic or geometric sequences.
9. Find the future value of ordinary annuities and annuities due.
10. Find the present value of ordinary annuities and annuities due.
11. Find the payment amount and total interest paid on a loan.
12. Find the interest part and principal of a payment of a loan.

D. Unit IV Probability and Statistics

1. Use the Fundamental Principal of Counting, permutation, and combination formulas.
2. Determine the Sample space of a probability experiment.
3. Find the probability of a simple event as well as a compound event.
4. Use the conditional probability formula.
5. Determine when events are independent or dependent.

EPCC Core Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate effective written, oral, and/or visual **communication skills**.
2. Apply **critical thinking skills** by engaging in creative thinking, innovation, inquiry, analysis, evaluation, and synthesis of information.
3. Demonstrate **empirical and quantitative skills** by formulating an inquiry and then identifying and following an investigative process using empirical and/or qualitative/quantitative reasoning to satisfy the inquiry.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

1. Apply elementary functions, including linear, quadratic, polynomial, rational, logarithmic, and exponential functions to solving real-world problems.
2. Solve mathematics of finance problems, including the computation of interest, annuities, and amortization of loans.

3. Apply basic matrix operations, including linear programming methods, to solve application problems.
4. Demonstrate fundamental probability techniques and application of those techniques, including expected value, to solve problems.
5. Apply matrix skills and probability analyses to model applications to solve real-world problems.

IV. Evaluation

There will be at least three in class exams (100 points each) and one required in class comprehensive final exam to evaluate student learning for the course. Each student is required to take all exams and the final exam. Quiz and Homework grades may also be used in the evaluation of the final grade, if the instructor so chooses. The final grade for the course will be assigned according to the following scale:

90---100	A
80---89	B
70---79	C
60---69	D
0----59	F

The homework grade will be weighted no more than the weight of one exam; the comprehensive final exam will be weighted at least as much as one exam. The final exam cannot be dropped.

NOTE: I and W grades will be assigned whenever the appropriate assignments and deadlines have been met. To receive an I, the student must have completed at least 80% of the course with at least a 75 average. The proper forms must also be completed by both student and the instructor before being submitted to the registrar.

V. Disability Statement (Americans with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

VII. Title IX and Sex Discrimination

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee

Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.