

EL CAMINO COLLEGE

COURSE OUTLINE OF RECORD - Approved

Course Acronym: BUS
Course Number: 115
Descriptive Title: Business Mathematics
Division: Business
Department: Business Management
Course Disciplines: Accounting, Business, Management

Catalog Description:

This course is designed to prepare students for mathematical concepts involving quantitative reasoning and analysis in management, finance, accounting, real estate, and other areas of business. The course content involves a thorough study of all aspects of business mathematics including computational skills, percentages, bank reconciliation, use of business formulas and equations, payroll, discounts, and markup/markdowns, simple and compound interest, present values analysis, annuities and sinking funds, credit, depreciation and inventory, payroll taxes, promissory notes, insurance, financial reports, and business statistics.

Conditions of Enrollment:

Prerequisite: Mathematics 40 or qualification by appropriate assessment

Recommended Preparation: English 1 or Eligibility for English 1A or qualification by appropriate assessment

Course Length: Full Term

Hours Lecture (per week): 3
Hours Laboratory (per week): 0
Outside Study Hours: 6
Total Hours: 54

Course Units: 3

Grading Method: Letter Grade and Pass/No Pass

Credit Status: Credit, degree applicable

Transfer CSU: Yes Effective Date: Fall 2017

Transfer UC: No

General Education:

ECC

Term: Other:

CSU GE:

Area B4 - Physical Universe and its Life Forms: Mathematics/Quantitative Reasoning

Term: Other: Fall 2018

IGETC:

Term: Other:

II. Outcomes and Objectives

A. Student Learning Outcomes (SLOs) (The course student learning outcomes are listed below.)

SLO #1 Word Problems into Equations

Interpret and convert word problems into equations, solve mathematical equations, and produce/interpret results in numerical or graphical form.

SLO #2 Algebraic Formulas

Utilize tables and algebraic formulas to perform calculations necessary to determine business, financial, and contractual obligations.

SLO #3 Procedures and Reports

Explain basic accounting procedures and prepare accounting reports and basic financial statements.

SLO #4 Business Statistics

Calculate and interpret statistical data and apply them to business decision making processes.

B. Course Objectives (The major learning objective for in this course are listed below)

1. Convert business problems into equations and solve using addition, subtraction, multiplication, and division, fractions, decimals, and percentages.
2. Prepare and reconcile bank statements and checking accounts.
3. Analyze the payroll process and functions, and calculate gross pay, net pay, and employers' payroll taxes.
4. Differentiate between the various discounts including trade, cash, markups, and markdowns. Assess the role of market forces that impact these types of business transactions.
5. Calculate simple interest, promissory notes, payments, and the discount process, compound interest, future value, present value, ordinary annuity, annuity due, and sinking funds by using tables and algebraic formulas.
6. Calculate principal, interest, payments, amortizations, annual percentage rate (APR) for real estate installment loans and credit card transactions.
7. Prepare and use interest tables for amortization loans.
8. Evaluate, compare, and determine the true cost of various types of loans.
9. Compare the advantages and disadvantages of home ownership.
10. Analyze, interpret, discuss, and prepare financial statements.
11. Analyze, interpret, explain, and calculate stock and bond quotations, price-earnings (P/E) ratios, dividend yields, bond yields, and earnings per share (EPS).
12. Examine the concept of depreciation and calculate different methods of depreciation including straight-line, accelerated cost recovery systems (ACRS) and modified accelerated cost recovery systems (MACRS).
13. Calculate the ending inventory by last in first out (LIFO), first in first out (FIFO), weighted averages, specific identifications, gross profits and retail methods.
14. Differentiate and calculate the various forms of taxation such as income, sales, property, and excise.
15. Differentiate between the various types of insurances such as life, casualty, disability, and automobile.
16. Perform calculations necessary to measure the mean, median, and mode.
17. Analyze and interpret the forms of a graph such as bar, line, and circle.

III. Outline of Subject Matter

(Topics should be detailed enough to enable an instructor to determine the major areas that should be covered to ensure consistency from instructor to instructor and semester to semester.)

Major Topics

I. Foundational Mathematical Concepts and Business Applications (2 hours, lecture)

- A. Numeric knowledge, number sense, measurement, and computation
- B. Dissecting and solving word problems
- C. Common applications of math in business
- D. Developing formulas from word problems

II. Applications of Concepts (4 hours, lecture)

- A. Procedures for conversion
- B. Decimal solution methods
- C. Banking and the checking account
- D. Bank statement reconciliation process

III. Solution Methods for the Unknown (3 hours, lecture)

- A. Solving for the unknown
- B. Algebraic equations
- C. Word Problems and algebraic solutions
- D. Order of operations

IV. Percentages and Their Applications (3 hours, lecture)

- A. Conversions
- B. Application of percentages - portion formula
- C. Solving for percentage rate
- D. Solving for percentage decrease

V. Discounts: Trade and Cash (3 hours, lecture)

- A. Trade discounts - Single and chain
- B. Cash discounts, credit terms, and partial payments
- C. Net price equivalent rate calculation
- D. Single equivalent discount rate calculation
- E. Credit terms and credit due calculations

VI. Pricing Calculations (3 hours, lecture)

- A. Markup on Cost
- B. Markup on selling prices
- C. Markdown calculations
- D. Price calculations for perishables
- E. Breakeven calculation and analysis
- F. Formulas for converting between percent markup on cost to percent markup on selling price
- G. Contribution margin calculation

VII. Payroll (3 hours, lecture)

- A. Calculations for employee gross pay
- B. Overtime calculations
- C. Piece rate pay calculations
- D. Differential pay schedule calculations
- E. Commission, variable commission, and draw calculations
- F. Computations for payroll deductions on employees' pay

VIII. Simple Interest (3 hours, lecture)

- A. Calculation of simple interest and maturity value
- B. Solving for principal
- C. Solving for interest rate
- D. Solving for time
- E. Financial impact of partial note payments before due date

IX. Promissory Notes, Simple Discount Notes, and the Discount Process (1.5 hours, lecture)

- A. Simple discount note and simple interest formula
- B. The discount process for an interest-bearing note before maturity
- C. Maturity value formula
- D. Discount rate and effective rate calculations

X. Compound Interest and Present Value (1.5 hours, lecture)

- A. Compound interest
- B. Future value
- C. Present value (discount value)
- D. Nominal versus Effective Rate Calculations
- E. Compounding methods

XI. Annuities and Sinking Funds (3 hours, lecture)

- A. Annuities
- B. Ordinary annuity calculations
- C. Annuity due calculations
- D. Present value of an ordinary annuity
- E. Sinking funds

XII. Installment and Revolving Loans (3 hours, lecture)

- A. Cost of installment credit
- B. Cost of revolving credit
- C. Average daily balance calculation
- D. The cost of home ownership
- E. Types of mortgages
- F. Monthly mortgage payment calculation
- G. Amortization schedules

XIII. Financial Reports (3 hours, lecture)

- A. Balance sheet
- B. Solving for owners' equity
- C. Vertical analysis
- D. Income statement
- E. Solving for gross profit, operating profit, and net profit
- F. Trend and ratio analysis

XIV. Depreciation (3 hours, lecture)

- A. Straight-line method
- B. Units of production method
- C. Declining balance method
- D. Adjustment for modified accelerated cost recovery system (MACRS) and ACRS
- E. Depreciation and remaining value calculations
- F. Depreciation for partial years calculation

XV. Inventory and Overhead (3 hours, lecture)

- A. Specific identification
- B. Weighted Average
- C. LIFO/FIFO
- D. Calculating gross profit from LIFO versus FIFO
- E. Retail Method versus Gross Profit Method
- F. Inventory Turnover calculations
- G. Distribution of Overhead

XVI. Sales, Excise, and Property Taxes (1.5 hours, lecture)

- A. Sales and Excise Tax calculations
- B. Property Tax calculations
- C. Assessed value calculations

XVII. Insurance (3 hours, lecture)

- A. Life, Fire, and Auto Insurance
- B. Risk calculations and basic actuarial principles
- C. Premium calculation
- D. Short rate and cancellation refund calculations
- E. Coinsurance calculations

XVIII. Investments (3 hours, lecture)

- A. Stocks, Bonds, and Mutual Funds
- B. Return calculations and other investment analysis
- C. PE Ratios
- D. Earnings per share calculations
- E. Return on investment analysis
- F. Bond yield calculations
- G. Net asset value calculation

XIX. Business Statistics (4.5 hours, lecture)

- A. Mean, median, mode
- B. Frequency distribution, and graphs
- C. Standard deviation
- D. Variance
- E. Range
- F. Other measures of dispersion
- G. Index numbers and price relative

Total Lecture Hours: 54

Total Laboratory Hours: 0

Total Hours: 54

IV. Primary Method of Evaluation and Sample Assignments**A. Primary Method of Evaluation (choose one):**

- 2) Problem solving demonstrations (computational or non-computational)

B. Typical Assignment Using Primary Method of Evaluation

Dollar Dress Shop's inventory at cost on January 1 was \$82,800. Its retail value is \$87,500. During the year, Dollar purchased additional merchandise at a cost of \$300,000 with a retail value of \$325,000. The net sales at retail for the year were \$295,000. Produce a report (1-2 pages) illustrating the calculation of Dollar's inventory at cost by the retail method, and round the cost ratio to the nearest whole percent.

C. College-level Critical Thinking Assignments

Critical Thinking Assignment 1:

Given the balance sheet for True Corporation (provided to student along with other pertinent information), produce a report (1-2 pages) detailing for following calculations: 1) the current ratio, 2) the acid test ratio, 3) the average day's collections, 4) the asset turnover, 5) the inventory turnover, 6) the debt ratio. Provide an analysis based on the results and include this summary in the report.

Critical Thinking Assignment 2:

The Muffin Shop makes no-fat blueberry muffins that cost \$.70 each. The Muffin Shop knows that 15% of the muffins will spoil. Produce a report (1-2 pages) indicating the price and strategy if the Muffin Shop wants 40% markup on cost and produces 800 muffins.

D. Other Typical Assessment and Evaluation Methods

Homework Problems, Multiple Choice, Other Exams, Quizzes

V. Instructional Methods

Demonstration, Lecture, Other (specify)

If other:

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. Work Outside of Class

Answer questions, Problem solving activity, Required reading, Skill practice, Study

If Other:

VII. Texts and Materials

A. Up-to-date Representative Textbooks: (Please use the following format: Author, Title, Edition, Publisher, Year. If you wish to list a text that is more than 5 years old, please annotate it as a "discipline standard".)

Jeffrey Slater, Sharon M. Wittry, Practical Business Math Procedures, 12th ed., McGraw-Hill Education, 2017.

B. Alternative Textbooks: (Please use the following format: Author, Title, Edition, Publisher, Year. If you wish to list a text that is more than 5 years old, please annotate it as a "discipline standard".)

C. Required Supplementary Readings

D. Other Required Materials

VIII. Conditions of Enrollment

A. Requisites (Course Prerequisites and Corequisites) Skills needed without which a student would be highly unlikely to succeed.

Requisite: Prerequisite
Category: sequential

Requisite course(s): List both prerequisites and corequisites in this box.

Category: Other (please Specify) CSU Requirement for qualification as Area B4 GE

Mathematics 40 or qualification by appropriate assessment

Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).

Manipulate algebraic expressions, including expressions with fractions and radicals.

MATH 40 - Use the properties of the real numbers to evaluate, simplify, and factor algebraic expressions, including expressions with fractions and radicals.

Solve quadratic equations and systems of linear equations.

MATH 40 - Set up and solve application problems using linear equations and inequalities, systems of two linear equations with two variables, and quadratic equations.

B. Requisite Skills: (Non-Course Prerequisite and Corequisites) Skills needed without which a student would be highly unlikely to succeed.

Requisite:

Requisite and Matching Skill(s): Bold the requisite skill(s). If applicable

C. Recommended Preparations (Course) (Skills with which a student's ability to succeed will be strongly enhanced.)

Requisite course: ENGL 1

Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).

Students need well-developed reading skills in order to understand and interpret information in their textbooks and writing skills to develop essays and projects.

ENGL 1- Summarize, analyze, evaluate, and synthesize college-level texts.

ENGL 1 -Write a well-reasoned, well-supported expository essay that demonstrates application of the academic writing process.

D. Recommended Preparation (Non-Course) (Skills with which a student's ability to succeed will be strongly enhanced.)

Requisite: Eligibility for English 1A or qualification by appropriate assessment

Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable

This course involves reading college level textbooks, developing projects, and answering essay questions. A student's success in this class will be enhanced if they have these skills.

Summarize, analyze, evaluate, and synthesize college-level texts.

Write a well-reasoned, well-supported expository essay that demonstrates application of the academic writing process.

E. Enrollment Limitations

Enrollment Limitations and Category:

Enrollment Limitations Impact:

Course Created by: William L. Davies on 07/01/1973

Original Board Approval Date:

Last Reviewed and/or Revised by: Melissa Som de Cerff

Date: 04/03/2019

Last Board Approval Date: