MAT 105 BUSINESS MATHEMATICS (3 credit hours)

KCTCS Course Information

Official Course Description	Covers basic mathematical concepts as applied to finance. Includes percentages, simple and compound interest, annuities, sinking funds, depreciation, and consumer debt, including installment buying, credit cards, and mortgages.
	Pre-Requisite: MAT 062 or MAT 065 or equivalent as determined by KCTCS placement examination.

OFFICIAL COURSE COMPETENCIES

Upon completion of this course, the student can:

1. Solve for the unknown quantity in a percentage, rate, and base problem.
2. Determine percent increase and decrease using markup and markdown applications.
3. Apply use of annual percentage rate and annual percentage yield to problems in finance.
4. Solve problems which involve the simple interest formula.
5. Calculate compound interest and compound amount.
6. Determine present and future values of an annuity.
7. Calculate periodic payment for a sinking fund.
8. Set up an amortization schedule and calculate the early payoff of a loan.
9. Solve problems involving installment buying and credit card usage.
10. Determine mortgage payment amount, closing costs, and total cost of a loan.
11. Compute annual and accumulated depreciation and book value using various depreciation methods.
12. Solve application problems involving the above competencies.

MAT 105 COURSE OUTLINE

I. Percents
    A. Percentage, Base and Rate
    B. Percent Increase and Decrease
    C. Markup and Markdown
II. Simple Interest
    A. Ordinary and Exact Methods
    B. Appropriate Use of Simple Interest Formula
III. Compound Interest
    A. Annual Percentage Rate
    B. Annual Percentage Yield
    C. Present and Future Value of Money
IV. Consumer Savings
    A. Annuity
    B. Sinking Fund
V. Fixed Installment Loans
    A. Amount of Periodic Payment, Finance Charge and Total Amount Paid
    B. Unearned Interest on Early Payoff
VI. Credit Cards
    A. Average Daily Balance Method
    B. Unpaid Balance Method
VII. Mortgages
    A. Closing Costs
    B. Truth in Lending Statements
    C. Amortization Schedule
    D. Total Cost of Loan
VIII. Depreciation
    A. Straight-Line Method
    B. Declining-Balance Method
    C. Sum-of –the-Year's Digits Method
    D. Accelerated Cost Recovery System

GENERAL EDUCATION COMPETENCIES

A.   Knowledge of human cultures and the physical and natural worlds through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts.
B.   Intellectual and practical skills, including
- inquiry and analysis
- critical and creative thinking
- written and oral communication
- quantitative literacy
- information literacy
- teamwork and problem solving

C.   Personal and social responsibility, including
- civic knowledge and engagement (local and global)
- intercultural knowledge and competence
- ethical reasoning and action
- foundations and skills for lifelong learning

D.   Integrative and applied learning, including synthesis and advanced accomplishment across general and specialized skills.

STUDENT LEARNING OUTCOMES FOR QUANTITATIVE REASONING   (Approved Fall 2017)

In MAT 105, students will learn to:

1.   Interpret information presented in mathematical and/or statistical forms by (Gen Ed Comp B):
- Determine percent increase and decrease using markup and markdown applications.

2.   Illustrate and communicate mathematical and/or statistical information symbolically, visually, and/or numerically by (Gen Ed Comp A, B, C):
- Set up an amortization schedule and calculate the early payoff of a loan.
- Compute annual and accumulated depreciation and book value using various depreciation methods.

3.   Determine when computations are needed and execute the appropriate computations by (Gen Ed Comp A, B):
- Solve for the unknown quantity in a percentage, rate, and base problem
- Solve problems which involve the simple interest formula.
- Calculate compound interest and compound amount.
- Determine present and future values of an annuity.
- Calculate periodic payment for a sinking fund.

3.   Apply an appropriate model to the problem to be solved by (Gen Ed Comp A, B, C):
- Solve application problems involving compound interest, annuities and sinking funds.
- Determine mortgage payment amount, closing costs, and total cost of a loan.

4.   Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis by (Gen Ed Comp A, D):
- Apply use of annual percentage rate and annual percentage yield to problems in finance.

LEARNING RESOURCES

- ✓   Miller, C. D. et al. (2008). *Business mathematics (11th ed.).* Boston, MA: Addison-Wesley, Inc.