NVCC COLLEGE-WIDE COURSE CONTENT SUMMARY

BUS 125 - APPLIED BUSINESS MATHEMATICS (3 CR.)

COURSE DESCRIPTION

Applies mathematical operations to business process and problems such as sales and property taxes, checkbook records and bank reconciliation, depreciation, overhead, distribution of corporate dividends, commercial discounts, markup, markdown, simple interest, present values, bank discount notes, multiple payment plans, compound interest, annuities, sinking funds and amortization. Lecture 3 hours per week.

GENERAL COURSE PURPOSE

This course is designed as a semester course to provide instruction in the practical application of mathematical concepts and techniques to business related problems. Specific areas include (1) maintenance of checkbook records and periodic bank statement reconciliation, (2) computation of ordinary and exact interest on promissory notes, (3) determination of present value of simple interest notes, (4) discounting of simple interest and bank discount notes, (5) computation of depreciation of business assets, (6) comparison and selection of commercial discounts (7) determination of markup and markdown of merchandise, (8) common methods of distribution of profit/loss in partnerships, (9) distribution of corporate dividends, (10) recognition and understanding of problems involving compound interest, present value at compound interest, sinking funds, amortization, and annuities, and (11) various applications of multiple payment plans.

ENTRY LEVEL COMPETENCIES

A working knowledge of arithmetic, average skills in reading comprehension, and the ability to write and present ideas using standard English. Prerequisite is MTH 120 - "Introduction to Mathematics".

COURSE OBJECTIVES

A. **CALCULATOR PROFICIENCY**. The student will be able to use a basic desk or personal calculator to solve problems related to the topics listed below

B. **TERMINOLOGY.** The student will be able to understand and properly use terminology associated with each topic addressed in the course objectives

C. **CHECKBOOK RECORDS AND BANK RECONCILIATION.** The student will be able to:
1. maintain appropriate forms and records necessary for a checking account
2. reconcile periodic bank statements and related checkbook registers

D. **SIMPLE INTEREST NOTES.** The student will be able to:
1. compute simple interest using both ordinary and exact interest
2. use equation solving techniques to find the unknown variable in simple interest formulas
3. calculate the amount of interest earned by holders of a note that is rediscounted on a given date
4. compare the similarities and differences between simple interest and bank discount notes
5. illustrate the advantage of a retailer writing a discount note in order to pay

for merchandise within a given cash discount period

F. **DEPRECIATION.** The student will be able to:
1. compute the annual cost recovery using the accelerated cost recovery system
2. calculate annual depreciation of a business asset using any or all of the following methods:
   a. straight line
   b. sum of the digits
   c. declining balance
   d. units of production
3. construct a depreciation schedule in good form
4. compare the advantages and disadvantages of the traditional methods of depreciation

G. **COMMERCIAL DISCOUNTS.** The student will be able to:
1. compute the net cost rate factor and single equivalent discount rate from a given series of trade discounts
2. determine the net cost of merchandise when the list price and series discounts are given
3. use the trade discount formula, given two of the quantities, to find the unknown variable
4. calculate the amount of cash discount and net payment due on an invoice when either partial payment or full payment is made

H. **MARKUP AND MARKDOWN.** The student will be able to:
1. use the markup equation to find the unknown variable when the other two are given
2. calculate the percent markup based on cost and based on selling price if given the cost and the selling price
3. determine and use the selling price factor to compute the retail selling price
4. find the regular selling price, reduced selling price and percent of overall markup when merchandise is sold at a sale price and appropriate data are given
5. determine the selling price per unit on perishable items which will provide a desired profit

I. **DISTRIBUTION OF PROFIT OR LOSS IN PARTNERSHIPS.** The student will be able to calculate the distribution of profit or loss to individual partners according to a written partnership agreement which may include one or be a combination of the following:
1. interest on investment
2. salary agreements
3. allocation according to a fixed or stated ratio
4. allocation based on initial
5. total or average investment

J. **DISTRIBUTION OF A CORPORATE DIVIDEND.** The student will be able to calculate the dividend to be paid per share on preferred and/or common stock including cumulative preferred stock

K. **COMPOUND INTEREST.** The student will be able to:
1. demonstrate knowledge of the manual calculation of compound interest and maturity amount for short periods of time
2. calculate the compound interest and maturity amount using the appropriate tables
3. compute the amount of interest earned on accounts which earn interest compounded daily using the appropriate tables
4. analyze differences which result from different interest rates and different compounding frequencies
5. calculate present value at compound interest using the appropriate tables and analyze his/her findings

L. **ANNUITIES.** The student will be able to:
1. compute the maturity amount and the total interest earned on an annuity using the appropriate tables
2. find the present value of an annuity using the appropriate tables
3. calculate the equivalent cash price of future annuitized contracts

M. **SINKING FUND AND AMORTIZATION.** The student will be able to:
1. determine the periodic payment required relative to a sinking fund using the appropriate tables
2. calculate the total amount of sinking fund payments and the amount of interest that was earned
3. complete a sinking fund schedule
4. compute the periodic payment necessary to amortize a loan using the appropriate tables
5. calculate the total amount of the payments made on a loan and the total amount of interest included in those payments
6. complete an amortization schedule

N. **MULTIPLE PAYMENT PLANS.** The student will be able to:
1. analyze acceptable methods of applying partial payments that are made on a note and calculate the amount of each payment that would be interest and the amount that would be applied to reduce principal
2. compute the balance due on a note after the application of partial payments on the note
3. analyze the different types of revolving charge accounts and the various methods of calculating interest
4. determine the total finance charge, the periodic payment amount, the true annual percentage rate, and the total cost involved in an installment purchase

O. **WAGE AND PAYROLL COMPUTATIONS.** The student will be able to:
1. calculate gross wages and net payrolls when given appropriate data for salary, commission, production, and hourly rates
2. calculate net proceeds or gross cost on sales and purchases made through commission agents
3. determine deductions for social security, federal income tax and other common deductions as indicated by using appropriate tables and/or given rates
4. compute employees' wages subject to social security tax and complete the basic portion of the federal FORM 941 to reflect the amount of federal taxes paid
5. calculate employees' taxable wages for unemployment and determine the

employers' state and federal unemployment taxes

MAJOR TOPICS TO BE COVERED

- A. Checkbook records and bank reconciliation
- B. Simple interest notes
- C. Present value
- D. Bank discount notes
- E. Cost recovery and depreciation
- F. Commercial discounts
- G. Markup and Markdown
- H. Distribution of profit or loss in partnerships and corporations
- I. Compound interest
- J. Annuities
- K. Sinking funds
- L. Amortization
- M. Multiple payment plans
- N. Wage and payroll

OPTIONAL TOPICS

- A. Student research to provide a more comprehensive knowledge in areas such as promissory note rate fluctuations of area lenders, a comparison of depreciation methods used by small local firms, pricing strategies used marking merchandise, dividend history of various corporations, mortgage financing, bond sinking funds, installment buying practices of local businesses, and installment lending policies of area lenders.
- B. Enhancement of major content elements by integrating microcomputer projects.