Course Syllabus

POFT 1321 – Business Math

Catalog Description: Fundamentals of business mathematics including analytical and critical thinking skills.

Prerequisites: None

Semester Credit Hours: 3
Lecture Hours per Week: 3
Lab Hours per Week: 3
Extended Hours: 0
Contact Hours per Semester: 96

State Approval Code: 5204080000

Class section meeting time:

Alternate Operations During Campus Closure: In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Panola College to move to altered operations. During this time, Panola College may opt to continue delivery of instruction through methods that include, but are not limited to: online learning management system (CANVAS), online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor Panola College's website (www.panola.edu) for instructions about continuing courses remotely, CANVAS for each class for course-specific communication, and Panola College email for important general information.

Artificial Intelligence (AI) Course Policy: No use of Generative AI permitted. All work submitted by students will be generated by the students themselves, whether they are working individually or in groups. Students should not have another person or entity do the writing of any portion of an assignment, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Panola College's standards of academic integrity.

Instructional Goals and Purposes: The purpose of this course is to teach students the fundamentals of business mathematics including analytical and critical thinking skills.

Learning Outcomes:
1. Solve basic math problems using whole numbers, fractions, decimals, percents, and equations.
2. Solve business math problems using equations.
3. Maintain checking accounts and prepare bank reconciliations.
4. Prepare invoices and calculate trade and cash discounts.
5. Calculate markups and markdowns.
6. Compute payroll.
7. Compute simple and compound interest.
8. Solve mortgage problems.

9. Complete depreciation problems.
10. Evaluate investments in stocks, bonds, and mutual funds.

Specific Course Objectives (includes SCANS):
After studying the material presented in the text and online, the student should be able to complete all behavioral/learning objectives listed below with a minimum competency of 70% on quizzes and exams.

1. **Solve basic math problems using whole numbers, fractions, decimals, and percents**. (1a-i, 1a-ii, 1a-iii, 1a-iv, 1b-iii, 1b-vi, 2a-ii, 2c-iii, 2e-ii)
   a. Identify the place value of whole numbers.
   b. Read and write whole numbers in numerical and word form.
   c. Round whole numbers to a specified place value.
   d. Add, subtract, multiply, and divide whole numbers manually and using a calculator.
   e. Solve business math word problems using whole numbers.
   f. Identify a proper fraction, an improper fraction, and a mixed number.
   g. Convert a mixed number to an improper fraction.
   h. Convert an improper fraction to a mixed number.
   i. Raise a fraction to higher terms.
   j. Reduce a fraction to its lowest terms.
   k. Add, subtract, multiply, and divide fractions and mixed numbers.
   l. Use the cancellation method to simplify multiplication and division of fractions.
   m. Convert fractions to decimals and decimals to fractions.
   n. Use the calculator to add, subtract, multiply, and divide fractions and mixed numbers.
   o. Solve business math word problems using fractions and mixed numbers.
   p. Identify the place value of decimal numbers.
   q. Read and write decimal numbers in numerical and word form.
   r. Round decimal numbers to a specified place value.
   s. Add, subtract, multiply, and divide using decimal numbers.
   t. Convert decimals and fractions.
   u. Convert fractions to decimals.
   v. Solve business math word problems using decimals.
   w. Convert percents to decimals.
   x. Convert decimals to percents.
   y. Convert percents to fractions.
   z. Convert fractions to percents.
   aa. Use the percentage formulas to find a rate, the portion, or the base.
   bb. Find the amount of increase or decrease.
   cc. Find the percent increase or decrease.
   dd. Use the percentage formulas to solve business math word problems.
2. **Solve business math problems using equations**. (1a-i, 1a-iii, 1a-iv, 1b-iv, 1b-vi, 2e-ii)
   a. Explain the concept, terminology, and rules of equations.
   b. Write expressions and equations from written statements.
   c. Solve equations for the unknown and prove the solution.
   d. Set up and solve business-related word problems by using equations.
   e. Express a relationship as a ratio.
   f. Set up proportions.
   g. Apply ratios and proportions to problem-solving situations.
3. **Maintain checking accounts and prepare bank reconciliations**. (1a-i, 1a-ii, 1a-iii, 1a-iv, 1b-vi, 2a-ii, 2e-ii)
   a. Apply banking terminology.
   b. Open a checking account.
   c. Write a check in proper form.
   d. Endorse a check by using blank, restrictive, and full endorsements.
   e. Prepare deposit slips in proper form.
   f. Use check stubs or checkbook registers to record account transactions.
   g. Recall the parts of a bank statement.

    h.   Prepare a bank statement reconciliation.
4. **Prepare invoices and calculate trade and cash discounts**. (1a-i, 1a-ii, 1a-iii, 1a-iv, 1b-ii, 1b-vi, 2a-i, 2a-ii, 2e-ii)
    a. Recall the parts of an invoice.
    b. Extend and total an invoice.
    c. Calculate the amount of a single trade discount.
    d. Calculate the net price by using the net price factor.
    e. Calculate the trade discount rate when the list price and net price are known.
    f. Calculate the net price of a series of trade discounts by using the net price factor, complement method.
    g. Calculate the amount of a trade discount by using a single equivalent discount.
    h. Calculate cash discounts and net amount due.
    i. Calculate the net amount due with credit given for a partial payment.
    j. Determine the discount date and net date.
5. **Calculate markups and markdowns**. (1a-i, 1a-iii, 1a-iv, 1b-vi, 2a-ii, 2d-i, 2e-ii)
    a. Use the retailing equation to find the cost, amount of markup, and selling price of an item.
    b. Calculate the percent markup based on cost.
    c. Calculate the selling price when cost and percent markup based on cost are known.
    d. Calculate the cost when selling price and percent markup based on cost are known.
    e. Calculate percent markup based on selling price.
    f. Calculate selling price when cost and percent markup based on selling price are known.
    g. Calculate cost when selling price and percent markup based on selling price are known.
    h. Convert percent markup based on cost to percent markup based on selling price, and vice versa.
    i. Determine the amount of markdown and the markdown percent.
    j. Determine the selling price after a markdown and the original price before a markdown.
    k. Compute the final selling price after a series of markups and markdowns.
    l. Calculate the selling price of perishable goods.
6. **Compute payroll**. (1a-i, 1a-iii, 1a-iv, 1b-vi, 2a-i, 2a-ii, 2d-i, 2e-ii)
    a. Calculate salary on the basis of weekly, biweekly, semimonthly, and monthly pay periods.
    b. Calculate gross pay by hourly wage, including regular and overtime pay.
    c. Calculate gross pay by straight and differential piecework schedules.
    d. Calculate gross pay by straight and incremental commission, salary plus commission, and drawing accounts.
    e. Compute FICA taxes, both social security and Medicare, withheld from an employee's paycheck.
    f. Calculate an employee's federal income tax withholding (FIT) by the percentage method.
    g. Determine an employee's total withholding for federal income tax, social security, and Medicare using the combined wage bracket tables.
    h. Compute FICA tax for employers and self-employment tax for self-employed persons.
    i. Compute the amount of state unemployment taxes (SUTA) and federal unemployment taxes (FUTA).
    j. Calculate an employer's fringe benefit expenses.
    k. Review Internal Revenue Service payroll forms.
7. **Compute simple and compound interest**. (1a-i, 1a-iii, 1a-iv, 1b-vi, 2a-i, 2a-ii, 2e-ii)
    a. Compute simple interest for loans with terms of years or months.
    b. Calculate simple interest for loans with terms of days by using exact interest or ordinary interest methods.
    c. Calculate the maturity value of a loan.
    d. Calculate the number of days of a loan.
    e. Determine the maturity date of a loan.
    f. Solve for the principal, rate, or time.
    g. Calculate loans involving partial payments before maturity.
    h. Calculate bank discount and proceeds for simple discount notes.
    i. Calculate the true or effective rate of interest for a simple discount note.
    j. Discount notes before maturity.

      k. Manually calculate the compound amount (future value) and compound interest.
      l. Compute the compound amount (future value) and compound interest using the compound interest tables.
      m. Create compound interest table factors for periods beyond the table.
      n. Calculate the annual percentage yield (APY) or effective interest rate.
      o. Calculate the compound amount by using the compound interest formula.
      p. Calculate the present value of a future amount by using the present value tables.
      q. Create present value table factors for periods beyond the table.
      r. Calculate the present value of a future amount by using the present value formula.

8. **Solve mortgage problems**. (1a-i, 1a-iii, 1a-iv, 1b-vi, 2a-i, 2a-ii, 2e-ii)
      a. Calculate the monthly payment and total interest paid on a fixed-rate mortgage.
      b. Prepare a partial amortization schedule of a mortgage.
      c. Calculate the monthly PITI of a mortgage loan.
      d. Review closing costs and calculate the amount due at closing.
      e. Calculate the interest rate of an adjustable-rate mortgage.
      f. Calculate the potential amount of credit available to a borrower.
      g. Calculate the housing expense ratio and the total obligations ratio of a borrower.

9. **Complete depreciation problems**. (1-a-i, 1-a-iii, 1-a-iv, 1-b-vi, 2-a-i, 2-a-ii, 2-d-i, 2-e-ii)
      a. Calculate depreciation using the straight-line, the declining-balance, the sum-of-the-years-digits, the units-of-production, and the Modified Accelerated Cost Recovery System (MACRS) methods.
      b. Determine salvage value.
      c. Determine a rate of depreciation based on the straight-line method.
      d. Calculate book value.
      e. Determine gain or loss on the sale of an asset.
      f. Solve business problems involving depreciation.

10. **Evaluate investments in stocks, bonds, and mutual funds**. (1-a-i, 1-a-iii, 1-a-iv, 1-b-vi, 2-a-i, 2-a-ii, 2-e-ii)
      a. Read a newspaper to determine the selling price, volatility, and average selling price over the last year of a specific stock, bond, or mutual fund.
      b. Use the Internet to determine the selling price, volatility, and average selling price over the last year of a specific stock, bond, or mutual fund.
      c. Apply terminology associated with stocks, bonds, and mutual funds.
      d. Calculate the distribution of dividends to preferred and common stockholders.
      e. Calculate the current yield for a stock.
      f. Determine the price-earnings ratio for a stock.
      g. Compute the cost, proceeds, and gain or loss on a stock transaction.
      h. Compute the cost of purchasing bonds and the proceeds from the sale of bonds.
      i. Calculate the current yield for a bond.
      j. Calculate the sales charge and the sales charge percent of a mutual fund.
      k. Calculate the net asset value of a mutual fund.
      l. Calculate the number of shares purchased of a mutual fund.
      m. Calculate return on investment.

Course Content:
A general description of lecture/discussion topics included in this course are listed in the Learning Outcomes/Specific Course Objectives sections of this syllabus.

Students in all sections of Business Math will be required to do the following:

1. Students will read assigned chapters in the text and work example problems.
2. Students will use their textbook and notes to complete an online practice quiz and quiz for each chapter.
3. Students will complete online exams in the presence of a testing proctor (Proctorio).

Methods of Instruction/Course Format/Delivery: Students in both the traditional class and in the Internet class will have access to this course via Canvas. Students in the traditional class will meet

regularly for lecture over the material. Students in the Internet class are always welcome to attend the traditional class if one is available on the schedule.

Students in both the traditional and Internet classes should use email within Canvas to communicate with the instructor. Using Canvas email gives students access to the instructor and other classmates without having to remember or type email addresses—just select a name from the list. If students are not able to contact their instructor using email in Canvas, they may use his or her Panola College email address. Panola College instructors attempt to respond to all email within 24 hours. Please always include a subject line and your name in your email.

Major Assignments/Assessments:
The following items will be assigned and assessed during the semester and used to calculate the student's final grade:

- **Practice Quizzes**
  A practice quiz will be assigned for each chapter/module in this course. The quizzes will be given online and you may use your notes to complete them. The normal practice quiz includes 10-20 questions, and students will be able to take each quiz multiple times. The highest grade recorded after multiple attempts will be added to the gradebook. These quizzes are intended to prepare students for the actual chapter quiz.

- **Quizzes**
  After working through the example exercises and the practice quiz for each chapter, students will take an online quiz. The quizzes generally contain 10-20 questions. After the quizzes have been graded, students will be able to review their quizzes online and see a grade in the Canvas gradebook. Work is generally graded and posted the day following the deadline. Quizzes must be submitted before the assigned deadline—no makeup quizzes will be given. Approximately 12 quizzes covering Chapters 1-11, 14, 17, and 20 will be assigned and the two lowest quiz grades will be dropped at the end of the semester.

- **Exams**
  Four objective exams covering Chapters 1-11, 14, 17, and 20 will be given during the semester. Exams will be administered online in Canvas using Proctorio which provides a video/audio recording of your testing experience for the instructor. You will take the exams at home using the webcam on your computer; if you do not have a webcam, you may take the exams at one of the Panola College testing centers in Carthage, Center, or Marshall. If you are unable to take a test when it is scheduled, you must schedule the test with the instructor PRIOR to the testing date. An excused absence and makeup test may be granted for sudden illness or unforeseen circumstances.

Course Grade:
The grading scale for this course is as follows:

- Practice quizzes – 20%
- Quizzes – 30%
- Exams – 50%

All student grades including a mid-semester and final grade will be posted to Grades in Canvas.

Cheating is defined as unauthorized help on an examination or assigned course material. A student must not submit another student's work as his or her own. A student must not receive from any other student or give to any other student any information, answers, or help during an exam. A student must not "steal" the answers from an unsuspecting student during an exam. A student must not use any sources for answers during an exam (including but not limited to notes, books, or electronic devices) without prior authorization from the professor. A student must not obtain exam questions illegally, tamper with the exam questions, nor change the results of an exam after it has been graded. **All cheating infractions will result in a grade of "0" for the assignment. A student will fail the class upon his or her second cheating offense.** These policies shall be adhered to unless mitigating circumstances should prove a lesser

penalty should apply. Students shall have the right to contest a cheating or plagiarism claim; the appeals process is specifically defined in the student handbook.

Attendance:
Students in the face-to-face class are expected to arrive on time and remain in class until the class is over as random movement into, out of, or around the classroom is disruptive and disrespectful. Students are highly encouraged to participate in class by asking questions and engaging in discussions. Disruptive class behavior will result in dismissal from the classroom and an absent mark on the attendance record. Persistent, disruptive behavior may ultimately result in dismissal from the course, a failing grade, and further disciplinary actions in accordance with college policy.

Make up assignments/exams will only be granted in accord with the excused absence policy.

A student that chooses to NOT finish the course must complete the withdrawal procedure in the Student Success office in order to receive a "W." Otherwise, the student will receive a grade at the end of the semester commensurate with the work completed.

Students needing special classroom or testing accommodations because of physical or learning disabilities must contact the Student Success office before these services will be made available in the classroom.

Texts, Materials, and Supplies:
- *Contemporary Mathematics for Business and Consumers*, 8th Edition, 2017, Robert Brechner and George Bergeman, Cengage Learning; ISBN: 978-1-305-58544-7.
- Scientific or financial calculator
- Access to a computer and the Internet

Required Readings:
- Chapters 1-11, 14, 17, and 20 in *Contemporary Mathematics for Business and Consumers*, 8th edition.

Recommended Readings:
- None

Other:
- Courses conducted via video conferencing may be recorded and shared for instructional purposes by the instructor.
- For current texts and materials, use the following link to access bookstore listings: https://www.panolacollegestore.com
- For testing services, use the following link: https://www.panola.edu/student-services/student-support/academic-testing-center
- If any student in this class has special classroom or testing needs because of a physical learning or emotional condition, please contact the ADA Student Coordinator in Support Services located in the Charles C. Matthews Student Center or go to https://www.panola.edu/student-services/student-support/disability-support-services for more information.
- Panola College welcomes pregnant and parenting students as a part of the student body. This institution is committed to providing support and adaptations for a successful educational experience for pregnant and parenting students. Students experiencing a need for accommodations related to pregnancy or parenting will find a Pregnancy and Parenting Accommodations Request form in *The Pathfinder* or may request the form from the course instructor.
- Withdrawing from a course is the student's responsibility. Students who do not attend class and who do not withdraw will receive the grade earned for the course.
- Student Handbook, *The Pathfinder: https://www.panola.edu/* (located at the bottom under students)

SCANS CRITERIA

1) **Foundation skills are defined in three areas: basic skills, thinking skills, and personal qualities.**

   a) **Basic Skills**: A worker must read, write, perform arithmetic and mathematical operations, listen, and speak effectively. These skills include:
      i) Reading: locate, understand, and interpret written information in prose and in documents such as manuals, graphs, and schedules.
      ii) Writing: communicate thoughts, ideas, information, and messages in writing, and create documents such as letters, directions, manuals, reports, graphs, and flow charts.
      iii) Arithmetic and Mathematical Operations: perform basic computations and approach practical problems by choosing appropriately from a variety of mathematical techniques.
      iv) Listening: receive, attend to, interpret, and respond to verbal messages and other cues.
      v) Speaking: Organize ideas and communicate orally.

   b) **Thinking Skills**: A worker must think creatively, make decisions, solve problems, visualize, know how to learn, and reason effectively. These skills include:
      i) Creative Thinking: generate new ideas.
      ii) Decision Making: specify goals and constraints, generate alternatives, consider risks, and evaluate and choose the best alternative.
      iii) Problem Solving: recognize problems and devise and implement plan of action.
      iv) Visualize ("Seeing Things in the Mind's Eye"): organize and process symbols, pictures, graphs, objects, and other information.
      v) Knowing How to Learn: use efficient learning techniques to acquire and apply new knowledge and skills.
      vi) Reasoning: discover a rule or principle underlying the relationship between two or more objects and apply it when solving a problem.

   c) **Personal Qualities**: A worker must display responsibility, self-esteem, sociability, self-management, integrity, and honesty.
      i) Responsibility: exert a high level of effort and persevere toward goal attainment.
      ii) Self-Esteem: believe in one's own self-worth and maintain a positive view of oneself.
      iii) Sociability: demonstrate understanding, friendliness, adaptability, empathy, and politeness in group settings.
      iv) Self-Management: assess oneself accurately, set personal goals, monitor progress, and exhibit self-control.
      v) Integrity and Honesty: choose ethical courses of action.

2) **Workplace competencies are defined in five areas: resources, interpersonal skills, information, systems, and technology.**

   a) **Resources**: A worker must identify, organize, plan, and allocate resources effectively.
      i) Time: select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
      ii) Money: Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
      iii) Material and Facilities: Acquire, store, allocate, and use materials or space efficiently.
      Examples: construct a decision time line chart; use computer software to plan a project; prepare a budget; conduct a cost/benefits analysis; design an RFP process; write a job description; develop a staffing plan.

   b) **Interpersonal Skills**: A worker must work with others effectively.
      i) Participate as a Member of a Team: contribute to group effort.
      ii) Teach Others New Skills.
      iii) Serve Clients/Customers: work to satisfy customer's expectations.

iv) Exercise Leadership: communicate ideas to justify position, persuade and convince others, responsibly challenge existing procedures and policies.

v) Negotiate: work toward agreements involving exchange of resources, resolve divergent interests.

vi) Work with Diversity: work well with men and women from diverse backgrounds.

Examples: collaborate with a group member to solve a problem; work through a group conflict situation, train a colleague; deal with a dissatisfied customer in person; select and use appropriate leadership styles; use effective delegation techniques; conduct an individual or team negotiation; demonstrate an understanding of how people from different cultural backgrounds might behave in various situations.

c) **Information**: A worker must be able to acquire and use information.
   i) Acquire and Evaluate Information.
   ii) Organize and Maintain Information.
   iii) Interpret and Communicate Information.
   iv) Use Computers to Process Information.

Examples: research and collect data from various sources; develop a form to collect data; develop an inventory record-keeping system; produce a report using graphics; make an oral presentation using various media; use on-line computer data bases to research a report; use a computer spreadsheet to develop a budget.

d) **Systems**: A worker must understand complex interrelationships.
   i) Understand Systems: know how social, organizational, and technological systems work and operate effectively with them.
   ii) Monitor and Correct Performance: distinguish trends, predict impacts on system operations, diagnose deviations in systems' performance and correct malfunctions.
   iii) Improve or Design Systems: suggest modifications to existing systems and develop new or alternative systems to improve performance.

Examples: draw and interpret an organizational chart; develop a monitoring process; choose a situation needing improvement, break it down, examine it, propose an improvement, and implement it.

e) **Technology**: A worker must be able to work with a variety of technologies.
   i) Select Technology: choose procedures, tools or equipment including computers and related technologies.
   ii) Apply Technologies to Task: understand overall intent and proper procedures for setup and operation of equipment.
   iii) Maintain and Troubleshoot Equipment: Prevent, identify, or solve problems with equipment, including computers and other technologies.

Examples: read equipment descriptions and technical specifications to select equipment to meet needs; set up and assemble appropriate equipment from instructions; read and follow directions for troubleshooting and repairing equipment.