

COURSE OUTLINE **Pre-Algebra**

Course Description

MA 050. Pre-Algebra. 3 hours credit. This course will enable the student to gain confidence with the use of basic arithmetic, variables, negative numbers, algebraic expressions, and techniques for solving equations. The student will improve study habits leading to success in the sequence of algebra courses.

Course Relevance

The concepts learned in this course will build problem solving skills that are critical to everyday living. These concepts develop a solid foundation for continued math success.

Required Materials

Wright, F. D. *Prealgebra* (4th ed.). Murray, UT: Hawkes Publishing.

Scientific calculator

MA 050 online materials:

Adventure Learning Systems Courseware, Prealgebra.

Learning Outcomes

The intention is for the student to be able to

1. Use study skills and problem solving to be successful in his/her future learning
2. Perform mathematical procedures and techniques correctly
3. Develop basic algebraic concepts to begin the algebraic course sequence

Learning PACT Skills that will be DEVELOPED and/or documented in this course

Through the student's involvement in this course, he/she will develop his/her ability in the following PACT skill areas:

Analytical Thinking Skills

1. Problem Solving
 - Through the solution of multi-step problems, the student will gain perseverance and confidence in his/her problem solving ability.
 - Through the solution of word problems, the student will gain experience in solving real world problems.

Major Summative Assessment Task(s)

These learning outcomes and the Learning PACT skills will be demonstrated by

1. Solution of multi-step problems that require course comprehensive knowledge
2. Solution of word problems that require course comprehensive knowledge

Course Content

- I. Themes – Key recurring concepts that run throughout this course:
 - A. The use of real numbers
 - B. Solving equations
 - C. Simplifying algebraic expressions
 - D. Problem solving
- II. Issues – Key areas of conflict that must be understood in order to achieve the intended outcome:
 - A. Math anxiety
 - B. Test-taking anxiety
 - C. Time management
 - D. Preparations
 - E. Study skills
- III. Concepts – Key concepts that must be understood to address the issues:
 - A. Basic arithmetic skills
 - B. Individual responsibility and commitment
- IV. Skills/Competencies – Actions that are essential to achieve the course outcomes:
 - A. Demonstrate basic arithmetic skills
 - B. Solve equations
 - C. Operate with real numbers
 - D. Operate with fractions and integers

Learning Units

- I. Whole numbers and exponents
 - A. Operations with whole numbers
 - B. Rounding and estimating
 - C. Applications
 - D. Solving equations
 - E. Exponents and order of operations
 - F. Evaluating polynomials
- II. Integers
 - A. Introduction to integers
 - B. Addition and subtraction
 - C. Multiplication and division
 - D. Order of operations
 - E. Applications
 - F. Combining like terms
 - G. Evaluating polynomials
 - H. Solving equations
- III. Prime numbers and fractions
 - A. Testing for divisibility
 - B. Prime numbers
 - C. Prime factorization
 - D. Least common multiple

- E. Reducing and multiplications with fractions
 - F. Division with fractions
 - G. Solving equations
- IV. Fractions with mixed numbers
- A. Introduction to mixed numbers
 - B. Multiplication and division
 - C. Addition and subtraction
 - D. Solving equations
 - E. Ratios and proportions
- V. Decimal numbers and square roots
- A. Reading, writing, and rounding decimals
 - B. Adding and subtracting decimals
 - C. Multiplying and dividing decimals
 - D. Combining fractions and decimals
 - E. Solving equations with decimals
 - F. Square roots and Pythagorean theorem
- VI. Percent
- A. Understanding percent
 - B. Solving percent problems
- VII. Algebraic tools
- A. Translating English phrases into algebraic expressions
 - B. Solving equations with variables on both sides

Learning Activities

Independent and collaborative learning activities will be assigned to assist the student to achieve the intended learning outcome. Class discussion, lecture, manipulatives, and reading assignments will also contribute to the learning process. The following online teaching/learning activities will assist the student to achieve course outcomes: posted web pages, threaded discussions, written assignments, assigned reading, interactive CD assignments, and interaction with instructor and other students through e-mail and discussion boards.

Grade Determination

Grade determination will be based on assessment tasks and other activities such as exams and assignments that the instructor identifies in the syllabus.