Wisconsin Indianhead Technical College

10834109 Pre-Algebra

Course Outcome Summary

Course Information

Description	Provides an introduction to algebra. Includes operations on real numbers, solving linear equations, percent and proportion, and an introduction to polynomials and statistics. Prepares students for elementary algebra and subsequent algebra related courses.
Instructional Level	Associate Degree
Total Credits	3.00
Total Hours	64.00

Types of Instruction

Instruction Type	Credits/Hours
Presentation (Lecture/Demonstration/Discussion)	2/32
Lab and/or Shop Experience	1/32

Course History

Revised By	Andrea Schullo (andrea.schullo)
Last Approval Date	7/1/2014

Target Population

This course is primarily designed to prepare students for

- Elementary Algebra with Apps

Can also be useful for - Intro to College Math

Pre/Corequisites

Prerequisite   Successful scores on placement test or Basic Education coursework

Course Competencies

1. **Use operations on the real numbers**
   Domain   *Cognitive*   *Level*   *Applying*   *Status*   *Active*

   Assessment Strategies
   1.1.   by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

   Criteria

   Your performance will be successful when:
   1.1.   learner identifies place names for real numbers
   1.2.   learner writes expanded notation for real numbers
   1.3.   learner adds, subtracts, multiplies, and divides real numbers
   1.4.   learner converts between fraction notation and decimal notation
   1.5.   learner finds equivalent fractions
   1.6.   learner rounds real numbers
   1.7.   learner factors whole numbers and finds least common multiples

   Learning Objectives
   1.a.   Review the rules and procedures for working with real numbers
   1.b.   Review the rules and procedures for adding, subtracting, multiplying, and dividing real numbers
   1.c.   Perform several arithmetic operations in the proper order of operations
   1.d.   Perform basic arithmetic functions with real numbers: add, subtract, multiply, and divide
   1.e.   Convert between fraction notation and decimal notation
   1.f.   Find equivalent fractions
   1.g.   Round real numbers
   1.h.   Choose the correct operation for solving an application problem
   1.i.   Solve an applied problem involving real numbers
   1.j.   Use a calculator to facilitate work with real numbers

2. **Solve simple linear equations by inspection**
   Domain   *Cognitive*   *Level*   *Applying*   *Status*   *Active*

   Assessment Strategies
   2.1.   by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

   Criteria

   Your performance will be successful when:
   2.1.   learner determines whether a given number is a solution of an equation
   2.2.   learner solves linear equations in one variable
   2.3.   learner represents unknown with a variable and translates English phrases into equations

   Learning Objectives
   2.a.   Define algebraic terminology: variable, term, coefficient, like terms, equations
   2.b.   Explain the Principle of Equality
   2.c.   Review order of operations for solving equations with variables
   2.d.   Define variables in a written English phrase
   2.e.   Translate written English phrases into equations
   2.f.   Discuss strategies for checking answers

3. **Use algebraic expressions**
   Domain   *Cognitive*   *Level*   *Applying*   *Status*   *Active*

   Assessment Strategies
   3.1.   by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

   Criteria

   Your performance will be successful when:
   3.1.   learner performs the arithmetic operations in proper sequence
   3.2.   learner evaluates numeric expressions containing exponents
   3.3.   learner evaluates an algebraic expression including combining like terms and distribution

3.4. learner simplifies expressions using the laws of exponents
3.5. learner simplifies complex fractions

Learning Objectives
3.a. Define algebraic expression
3.b. Review the order of operations for solving algebraic expressions
3.c. Define the product rule for exponents
3.d. Define the division rule for exponents
3.e. Apply the product rule to multiply algebraic expressions with exponents
3.f. Define the distributive property
3.g. Practice combining like terms
3.h. Explain how to substitute a real number for a variable
3.i. Practice simplifying complex fractions with and without variables

4. Solve basic linear equations using the principles of equality
Domain   *Cognitive*   *Level*   *Applying*   *Status*   *Active*

Assessment Strategies
4.1. by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

Criteria

Your performance will be successful when:
4.1. learner solves equations in the form x+a=c and x-a=c
4.2. learners solves equations in the form ax=c and x/a=c
4.3. learner solves equations in the form ax+b=c
4.4. learner solves equations with parentheses
4.5. learner solves equations by clearing fractions

Learning Objectives
4.a. Review principles of equality: addition, multiplication, and division
4.b. Explain the order of operations for solving linear equations
4.c. Review the distributive property for removing parentheses
4.d. Define the least common denominator method for clearing fractions

5. Solve problems using percent and proportion
Domain   *Cognitive*   *Level*   *Applying*   *Status*   *Active*

Assessment Strategies
5.1. by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

Criteria

Your performance will be successful when:
5.1. learner converts between percent notation and decimal notation
5.2. learner converts between fractional notation and percent notation
5.3. learner solves proportions, ratios and rates
5.4. learner solves percent problems using proportions
5.5. learner solves sales tax, discount, and commission problems
5.6. learner solves simple and compound interest problems

Learning Objectives
5.a. Review the place-value chart for decimal numbers
5.b. Review rules and procedures for conversion between fractional numbers, decimal numbers, and percent notation
5.c. Express a fraction to a percent
5.d. Express a decimal to a percent
5.e. Express a fraction as a ratio
5.f. Express a percent as a ratio
5.g. Use a ratio to compare two quantities
5.h. Write a proportion
5.i. Solve for a missing value in a proportion
5.j. Choose the correct operation for solving an application problem

5.k.	Solve an applied problem involving fractional numbers, decimal numbers, percents, and proportions accurately

## 6.	Perform operations with polynomials
Domain	*Cognitive*	*Level*	*Applying*	*Status*	*Active*

Assessment Strategies
6.1.	by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

Criteria

Your performance will be successful when:
6.1.	learner adds and subtracts polynomials
6.2.	learner multiplies a polynomial by a monomial
6.3.	learner multiplies two binomials
6.4.	learner factors greatest common factors from polynomials

Learning Objectives
6.a.	Identify terms of a polynomial
6.b.	Simplify expressions involving the addition and subtraction of polynomials
6.c.	Multiply a monomial times a polynomial
6.d.	Multiply binomials using FOIL
6.e.	Factor a polynomial by greatest common factor

## 7.	Graph lines and calculate statistics
Domain	*Cognitive*	*Level*	*Applying*	*Status*	*Active*

Assessment Strategies
7.1.	by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

Criteria

Your performance will be successful when:
7.1.	learner finds the mean average of a set of numbers
7.2.	learner finds the median of a set of numbers
7.3.	learner finds the mode of a set of numbers
7.4.	learner plots points on a coordinate system, and names the coordinates of points
7.5.	learner graphs horizontal and vertical lines

Learning Objectives
7.a.	Find measures of central tendency (mean, median, mode) for data sets
7.b.	Write data as ordered pairs
7.c.	Name the coordinates of points
7.d.	Graph points that lie on horizontal and vertical lines

## 8.	Solve application problems
Domain	*Cognitive*	*Level*	*Applying*	*Status*	*Active*

Assessment Strategies
8.1.	by a satisfactory score on all tests, quizzes or graded assignments incorporating this competency.

Criteria

Your performance will be successful when:
8.1.	learner solves applied problems involving several operations
8.2.	learner solves application problems involving commission, discount, simple interest, payroll, depreciation, profit, and sales tax
8.3.	learner solves applied problems involving percent increase and percent decrease
8.4.	learner finds length, area, volume, weight, mass, and temperature (including conversions)
8.5.	learner solves applied problems involving geometric formulas

Learning Objectives
8.a.	Choose the correct operations for solving applied problems
8.b.	Practice solving applied problems from various real-life scenarios

Course Learning Plans and Performance Assessment Tasks

Type	Title	Source	Status
LP	(No Title)	Course	Active
LP	(No Title)	Course	Active