COURSE INFORMATION FORM

DISCIPLINE Mathematics
COURSE TITLE Pre-College Mathematics I

CR.HR 3  LECT HR. 3  LAB HR.  CLIN/INTERN HR.  CLOCK HR. 

CATALOG DESCRIPTION
Review of all basic mathematical operations. Fractions, decimals, proportions, percentages and real numbers. Elementary geometry (perimeter, area and volume). Review of all operations in real numbers. Solutions of linear equations and inequalities in one variable, using and manipulating formulas. Properties of exponential numbers, definition and basic operations with polynomials and solutions of polynomial equations by factoring. Basic operations and simplification of rational expressions. Graphing linear equations in two variables. Self-paced course based on initial diagnostic.

PREREQUISITES
none

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:

1. Identify and use the terminology of arithmetic, percentages, ratios, and geometry.
2. Perform arithmetic computations of integers, fractions, and decimals.
3. Estimate the results of arithmetic computations.
4. Compute percentages and ratios.
5. Apply arithmetic, percentages, ratios, proportions and geometry to solutions of real life problems.
6. Draw appropriate diagrams to aid in solving arithmetic and geometric problems.
7. Identify and use algebraic terminology and expressions.
8. Make calculations by substituting values into algebraic expressions.
9. Identify and apply geometric and algebraic formulas.
10. Simplify and perform addition, subtraction, multiplication, and division on polynomial and rational expressions.
11. Factor polynomial expressions and solve quadratic equations using factoring.
12. Solve linear equations and inequalities.
13. Create and interpret linear graphs.
14. Determine the slope of a line from a graph or an equation and interpret slope.
15. Construct and solve linear equations derived from applied situations.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

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<th>Outcomes</th>
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PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Homework exercises (1-15)
2. Journal of vocabulary and processes (1-15)
3. Tests on skills and processes (1-15)
4. Projects that involve collecting and analyzing data (1-15)
5. Reports on mathematical findings (1-15)
6. Papers (1-15)
7. Portfolios (1-15)
8. Computer labs (1-15)
9. Collaborative assignments on problem solving and discovery exercises (1-15)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Whole numbers
   A. Arithmetic operations
   B. Rounding and estimating
   C. Graphing
   D. Exponents
   E. Order of operations
   F. Applications of whole number arithmetic

II. Fractions
   A. Simplify fractions
   B. Converting between fractions and mixed numbers
   C. Arithmetic operations on fractions and mixed numbers
   D. Applications of fractions and mixed numbers

III. Decimals
   A. Converting between fractions and decimals
   B. Arithmetic operations of decimals
   C. Applications of decimals

IV. Ratios and proportions
   A. Ratios and applications
   B. Rates and applications
   C. Proportions and applications

V. Percents
   A. Converting between fractions, decimals and percents
   B. Simple percent applications

VI. Measurement and units
   A. Convert between various US customary units
   B. Convert between various metric units
   C. Convert between US customary and metric units
   D. Arithmetic operations and applications with units

VII. Rational numbers
   A. Graphing integers
   B. Arithmetic operations on integers
C. Absolute value notation
D. Scientific notation

VIII. Geometry
A. Perimeter
B. Area
C. Volume
D. Square roots
E. Pythagorean Theorem*
F. Applications

IX. Algebra
A. Evaluating variable expressions
B. Simplifying variable expressions
C. Solving and checking linear equations
D. Applications of linear equations*

X. Elementary Statistics
A. Graphs and charts
B. Mean, median, mode

XI. Pre-algebra and introduction to algebraic expressions
A. Sets of real numbers and the real number line
B. Order of operations
C. Addition, subtraction, multiplication, and division or real numbers
D. Properties of real number and simplifying expressions
   1. Associative
   2. Commutative
   3. Distributive

XII. Solving linear equations and inequalities
A. Addition, subtraction, multiplication, and division properties of equality
B. Solving and checking linear equations
   1. Clearing fractions and decimals
   2. Linear equations with variables on both sides of the equation
C. Solving literal equations with several variables
D. Application problems modeled by linear equations
   1. Percent
   2. Geometry
E. Application problems modeled by linear inequalities

XIII. Graphing linear equations in two variables
A. Introducing the Cartesian coordinate system
B. Graph linear equations in two variables
   1. Setting up and completing a table of values for a linear equation of two variables
   2. Using x- and y-intercepts
3. Horizontal and vertical lines
4. Define slope of a line and interpret slope as a rate
5. Write equation of a line using slope-intercept form
6. Write equation of a line using point-slope form

C. Applications and modeling of linear equations

XIV. Polynomials and properties of exponents
A. Properties of exponents
   1. Simplify exponential expressions
   2. Multiply and divide common bases
   3. Definition of zero exponent and integer exponent
   4. Power rule
   5. Scientific notation
B. Definition of a polynomial
C. Addition, subtraction, multiplication, and division of polynomials

XV. Factoring polynomials
A. Greatest common factor
B. Factor by grouping
C. Trinomials
D. Special factorizations
   1. Difference of squares
   2. Sum of cubes
   3. Difference of cubes
   4. Perfect square trinomial
E. Solve quadratic and higher degree equations by factoring

XVI. Rational expressions
A. Simplify and reduce rational expressions
B. Domain restrictions of rational expressions
C. Multiplication and division of rational expressions
D. Common denominators
E. Addition and subtraction of rational expressions