I. GENERAL COURSE INFORMATION

Subject and Number: Mathematics 23
Descriptive Title: Pre-Algebra
Course Disciplines: Mathematics
Division: Mathematical Sciences

Catalog Description:
This course bridges the gap between arithmetic and formal algebra, developing number sense and operation sense, in order to formulate and solve algebraic equations with integers, fractions, and percents. Algebraic principles are applied to problems from a variety of fields. Other topics include: proportional reasoning, spatial reasoning, informal geometry and measurement, coordinate graphing, informational graphs, and data collection and description.

Conditions of Enrollment:
Recommended Preparation: Mathematics 12 or qualification by appropriate assessment.

Course Length:	**X Full Term**	**Other (Specify number of weeks):**
Hours Lecture:	**4.00 hours per week**	**TBA**
Hours Laboratory:	**0 hours per week**	**TBA**
Course Units:	**3.00**	

Grading Method: Letter
Credit Status: Non-Degree Credit

Transfer CSU: No
Transfer UC: No

General Education:
El Camino College:

CSU GE:

IGETC:

II. OUTCOMES AND OBJECTIVES

A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

1. Given an arithmetic expression involving rational numbers, multiple operations, and grouping symbols, students will simplify (or evaluate) the expression correctly, performing one operation at a time and without utilizing the commutative, associative, or distributive properties.

2. When presented with a linear equation in one variable that can be solved in two steps or a linear expressions that can be simplified in one step, students will demonstrate their ability to correctly identify each, to solve and check the equation and to simplify the expression, neatly showing all steps in order.

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage athttp://www.elcamino.edu/academics/slo/.

B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)

I. Acquire effective study skills including the use of the calculator in appropriate situations.
   I. Objective Exams

2. Perform various operations (addition, subtraction, multiplication, division, and exponentiation) on different sets of numbers (whole, integer, and rational) and recognize equivalence when it occurs, particularly with fractions, decimals and percents.
   I. Objective Exams

3. Formulate mathematical representations of real-world applications including the recognition of proportional relationships.
   I. Objective Exams

4. Estimate to determine the reasonableness of results.
   I. Objective Exams

5. Recognize and apply the concepts of variable, expression, and equation.
   I. Objective Exams

6. Solve linear equations.
   I. Objective Exams

7. Find perimeters, areas, and volumes of various geometrical shapes and use in applications.
   I. Objective Exams

8. Represent linear relationships with tables, graphs and equations (coordinate graphing).
   I. Objective Exams

9. Read, interpret, and construct tables, charts and graphs.
   I. Objective Exams

III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lecture	6	I	Introduction to study skills and calculator usage (interspersed throughout the course)
Lecture	6	II	INFORMATIONAL GRAPHING A. Measurement/Scale reading B. Reading, interpreting and drawing graphs C. Collecting and organizing data D. Mean, mode, and median
Lecture	10	III	GEOMETRY AND MEASUREMENT A. Formulas: area, perimeter, volume, surface area B. Dimensional Analysis: converting from one unit to another C. Applications interspersed
Lecture	12	IV	INTEGERS A. Operations on signed numbers B. Order of operations C. Introduction algebraic expressions D. Applications interspersed
Lecture	10	V	EQUATION SOLVING WITH INTEGERS A. Simple Linear Equations: B. Properties: (for example, distributive and equality properties) C. Like terms D. Linear equations with more than 1 operation
Lecture	14	VI	EQUATION SOLVING WITH COMMON FRACTIONS AND DECIMAL FRACTIONS A. Equivalent forms (such as 1/5 - .2 or 0.5<0.52) B. Equations: Formal and Informal methods C. Applications interspersed
Lecture	10	VII	RATIO, PROPORTION AND PERCENT A. Ratio and Proportion B. Percent C. Equivalent forms (such as 150%=1.5 or 0.5%<0.01) D. Using algebraic methods to solve proportions and percent problems E. Applications interspersed
Lecture	4	VIII	COORDINATE GRAPHING A. Plotting ordered pairs B. Linear graphs and tables of ordered pairs
Total Lecture Hours		72	
Total Laboratory Hours		0	
Total Hours		72	

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. **PRIMARY METHOD OF EVALUATION:**
Problem solving demonstrations (computational or non-computational)

B. **TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:**
Study the section of the text corresponding to applications of proportions and complete the assigned problems, for example:

-A restaurant in Hollywood produced 30 pounds of garbage in 1-1/2 days. How many pounds of garbage do they produce in two weeks?

C. **COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:**

2. Define variable(s), set-up an equation, and solve the following:
   The sum of two numbers is 32. The larger number is four less than three times the smaller number. What are the two numbers?
3. Find the sum of 9/48 and -7/40

D. **OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:**
Other exams
Quizzes
Homework Problems
Other (specify):
Individual and group activities

V. INSTRUCTIONAL METHODS

Discussion
Group Activities
Laboratory
Lecture

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS

Study
Answer questions
Skill practice
Required reading
Problem solving activities

Estimated Independent Study Hours per Week: 6

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Tussy, Gustafson, and Koenig. Prealgebra. 4th ed. Brooks/Cole Cengage Learning, 2011.

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification

B. Requisite Skills

Requisite Skills

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation	Category and Justification
Non-Course Prerequisite	Qualification by appropriate assessment.
Course Prerequisite Mathematics-12	Sequential Because of the sequential nature of this course, topics and concepts learned in the prerequisite will enhance the student's success.

D. Recommended Skills

Order a given set of numbers.
MATH 12 - Order a given set of numbers.
Use the order of operations to add, subtract, multiply and exponentiate whole numbers, fractions and decimals.
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Use divisibility tests and prime factorization to reduce fractions to lowest terms and perform operations on fractions.
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Convert rational numbers into decimals, fractions and percentages. MATH 12 - Convert rational numbers into decimals, fractions and percentages. MATH 12 - Convert rational numbers into decimals, fractions and percentages. Solve various application problems requiring the use of ratios, proportions, and percentages. MATH 12 - Solve various application problems requiring the use of ratios, proportions, and percentages. MATH 12 - Solve various application problems requiring the use of ratios, proportions, and percentages.

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact

Course created by Myrna Manly on 11/29/1994.

BOARD APPROVAL DATE:

LAST BOARD APPROVAL DATE: 04/15/2019

Last Reviewed and/or Revised by: Trudy Meyers **Date: October 13, 2018**
17466