

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

MATHEMATICS 010 – JUST-IN-TIME-SUPPORT FOR INTERMEDIATE ALGEBRA

2.5 hours lecture, 1.5 hours laboratory, 3 units

Catalog Description

A review of the core prerequisite skills, competencies, and concepts for intermediate algebra. Intended for students who are concurrently enrolled in MATH 110, Intermediate Algebra, at Cuyamaca College. Review topics include: computational skills developed in pre-algebra, the vocabulary of algebra, translation from English to algebra, and evaluation of literal expressions and functions. Topics covered in more depth include: solving and graphing linear equations and inequalities in one and two variables, solving and graphing systems of equations in two variables, factoring, algebraic operations on polynomial and rational-expressions, solving quadratics using factoring, and rational equations. Recommended for students with little or no recent knowledge of algebra. A graphing calculator is required for this course. **Pass/No Pass only. Non-degree applicable.**

Prerequisite

Appropriate placement

Corequisite

Concurrent enrollment in MATH 110 at Cuyamaca College

Course Content

- 1) Use of properties of real numbers, order of operations, absolute value and integer exponents
- 2) Introduction to the concept of variable to represent relationships from tables, graphs, problem situations and geometric diagrams
- 3) Linear relationships including the formulations, graphing, analyzing and solving of linear equations, linear inequalities and two variable systems of linear equations
- 4) Arithmetic operations and factoring techniques to reorganize algebraic expressions and equations
- 5) Basic operations on rational expressions
- 6) Solving simple rational equations and proportions
- 7) Various problem-solving strategies to analyze problems and to formulate and carry out appropriate solution strategies

Course Objectives

Students will be able to:

- 1) Reorganize expressions by:
 - a. Applying properties of integer exponents
 - b. Expanding the product of polynomials
 - c. Factoring polynomials
 - d. Performing arithmetic operations on polynomials
- 2) Solve:
 - a. Linear equations
 - b. Linear inequalities
 - c. Systems of Linear equations with two variables and/or
 - d. Rational equations (proportions)
- 3) Graph:
 - a. Linear equations in two variables
 - b. Linear inequalities in one variable
- 4) Form linear equations to represent relationships from:
 - a. Two points

- b. Slope and a point
 - c. A graph of a line and/or
 - d. An application problem
- 5) Solve and interpret the solutions of application problems
- 6) Inspect and analyze a graph in order to:
- a. Determine if it represents a function
 - b. Evaluate the function
 - c. Determine the domain and range of a function

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Independent exploration activities which measure students' ability to analyze the connections between the numeric, algebraic, graphic, and verbal representations of various types of algebraic expressions and inequalities.
- 2) Quizzes and exams (including a comprehensive in-class final exam) that measure students' ability to simplify algebraic expressions, and formulate, analyze, and solve algebraic equations and inequalities.
- 3) Homework and computer assignments in which students apply algebraic principles discussed in class to a series of practice problems that help students formulate questions and receive feedback from the instructor, tutors, or classmates.
- 4) Computer laboratory assignments in which students apply algebraic principles and problem-solving techniques discussed in class to help students identify gaps in their skill attainment and concept mastery and to improve their symbolic manipulation abilities and problem-solving skills.

Special Materials Required of Student

Scientific calculator

Minimum Instructional Facilities

- 1) Smart classroom with writing boards, overhead projector/screen, graphing utility overhead viewing panels
- 2) Basic skills math lab with computers, writing board, overhead projector/screen; appropriate software for integrated computer instruction (word processing, spreadsheet and other workplace software)

Method of Instruction

- 1) Lecture and discussion
- 2) Teamwork
- 3) Computer-facilitated instruction

Out-of-Class Assignments

- 1) Problem sets
- 2) Reading and/or writing assignments

Texts and References

- 1) Required (representative example): None
- 2) Supplemental: Exploratory projects and classroom activities created by Cuyamaca College math faculty

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Computing and simplifying using the basic operations on:
 - a. Real numbers
 - b. Polynomials
 - c. Algebraic expressions involving integer exponents and/or square roots
 - d. Numerical expressions involving absolute value
- 2) Factoring:
 - a. Using the greatest common factor
 - b. A difference of squares binomial
 - c. Reasonable trinomials where the leading coefficient is not one
- 3) Solving:
 - a. Linear equations with one or two variables
 - b. Linear inequalities
 - c. Systems of linear equations in two variables
- 4) Solving word problems and applications:
 - a. Translation of verbal expressions into algebraic expressions
 - b. Numerical and measurement problems
 - c. Word problems involving linear equations
- 5) Graphing and interpreting graphical data related to:
 - a. Points
 - b. Lines
 - c. Slope-Intercept Form of the equation of a line
 - d. Linear inequalities

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Solve multi-disciplinary application problems and interpret the results in context
- 2) Demonstrate relevant arithmetic, algebraic, and technological skills necessary in Intermediate Algebra

*For the complete list of **learning objectives**, please see the **Course Objectives** section