

MAT 070
INTRODUCTORY ALGEBRA

COURSE DESCRIPTION:

Prerequisites: MAT 060 or satisfactory score on placement test

Corequisites: RED 080 or ENG 085

This course establishes a foundation in algebraic concepts and problem solving. Topics include signed numbers, exponents, order of operations, simplifying expressions, solving linear equations and inequalities, graphing, formulas, polynomials, factoring, and elements of geometry. Upon completion, students should be able to apply the concepts learned in problem solving using appropriate technology. Solving quadratic equations by factoring is also included. Course Hours Per Week: Class, 3. Lab, 2. Semester Hours Credit, 4.

LEARNING OUTCOMES:

At the completion of this course, the student should be able to:

- a.) Demonstrate numerical proficiency with real numbers and have knowledge of the properties of real numbers.
- b.) Solve and graph equations and inequalities.
- c.) Perform algebraic operations on polynomials.
- d.) Use a variety of representations to explain problems – verbally, numerically, graphically, algebraically
- e.) Communicate mathematical thinking in a clear and coherent manner.
- f.) Apply mathematics in a real-world context via a comprehensive project.

OUTLINE OF COMPETENCIES:

- a. Perform arithmetic operations with fractions, decimals, and percents.
- b. Evaluate numbers with exponents.
- c. Use the order of operations.
- d. Find the additive inverse of a number.
- e. Find the absolute value of a number.
- f. Add, subtract, multiply, and divide real numbers.
- g. Use the properties of addition and multiplication to simplify expressions.
- h. Translate verbal statements into algebraic expressions.
- i. Recognize the symbols for inequality and apply them appropriately.
- j. Substitute values into algebraic expressions.
- k. Use the properties of addition and multiplication to solve linear equations.
- l. Evaluate formulas.
- m. Solve formulas for a specified variable.
- n. Solve problems by using proportions.

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- o. Solve percent problems.
- p. Solve and graph linear inequalities.
- q. Translate word problems into equations or inequalities and solve.
- r. Identify a linear equation in two variables.
- s. Identify an ordered pair associated with a given linear equation and graph that ordered pair in the Cartesian coordinate system.
- t. Identify the x-intercept and y-intercept of a linear equation in two variables.
- u. Graph linear equations and inequalities in two variables.
- v. Identify and graph vertical and horizontal lines.
- w. Given two points on a line, find the slope of the line.
- x. Given the slope and a point on the line, find the point-slope equation of the line.
- y. Given two points, find an equation for a line and write the equation in standard form.
- z. Rewrite a linear equation in slope-intercept form and sketch the graph using the slope and the y-intercept.
- aa. Identify the slope of a line parallel to a given line.
- bb. Identify the slope of a line perpendicular to a given line.
- cc. Define polynomial and determine whether selected expressions are polynomials.
- dd. Add and subtract polynomials.
- ee. Multiply polynomials.
- ff. Identify and apply rules for special products of binomials.
- gg. Divide polynomials.
- hh. Use the rules for exponents.
- ii. Express numbers in scientific notation and use scientific notation in calculations.
- jj. Completely factor selected algebraic expressions.
- kk. Identify algebraic expressions that are prime.
- ll. Solve quadratic equations by factoring.
- mm. Solve application problems involving quadratic equations.

REQUIRED TEXTBOOK AND MATERIALS:

Miller, O'Neill, Hyde. Introductory Algebra. 2nd ed. McGraw-Hill, 2009.

Scientific calculator

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 536-7207, ext. 1413 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.