

**Miami Dade Community College**  
**MAT 1033**  
**Intermediate Algebra**

**Course Description:** Through this course students develop various concepts of Algebra. Students will solve linear, quadratic, rational, and radical equations; graph linear equations and inequalities in one variable; graph linear equations in two variables; solve and graph systems of linear equations and inequalities in two variables; simplify rational expressions; simplify expressions containing rational exponents; simplify complex numbers; solve related applications.

**Prerequisites:** MAT 0024 or MAT 0020 with a grade of S or appropriate placement test score.

**Credits:** 3

**Course Competencies:**

**Competency 1:**

**The student will demonstrate knowledge of the slope of a line by:**

- a. Determining the slope of a line given two points that lie on the line.
- b. Determining the slope and intercept(s) of a line given its equation.
- c. Determining the slope of a line from a graph.
- d. Finding the slope of a line that is parallel to a given line.
- e. Finding the slope of a line that is perpendicular to a given line.

**Competency 2:**

**The student will demonstrate knowledge of linear equations and inequalities in two variables by:**

- a. Solving literal equations.
- b. Finding an equation of a line given two points.
- c. Finding an equation of a line given a point on the line and information about the slope of the line.
- d. Writing an equation of a line in standard form.
- e. Writing an equation of a line in slope-intercept form.
- f. Graphing linear equations in two variables using the slope and y-intercept of the line.
- g. Graphing linear inequalities in two variables.

- Competency 3:**      **The student will demonstrate knowledge of equations in two variables by:**
- a. Solving direct variation problems.
  - b. Solving inverse variation problems.
- Competency 4:**      **The student will demonstrate knowledge of systems of linear equations by:**
- a. Solving a system of linear equations in two variables using the addition method.
  - b. Solving a system of linear equations in two variables using the substitution method.
  - c. Solving a system of linear equations and inequalities in two variables by graphing.
  - d. Solving applications involving systems of linear equations.
- Competency 5:**      **The student will demonstrate knowledge of rational expressions and equations by:**
- a. Performing operations of addition, subtraction, multiplication and division on rational expressions.
  - b. Simplifying complex fractions.
  - c. Solving equations involving rational expressions including literal equations.
  - d. Dividing polynomials.
- Competency 6:**      **The student will demonstrate knowledge of radicals and rational exponents by:**
- a. Adding, subtracting, multiplying, and dividing expressions involving radicals
  - b. Simplifying expressions containing rational exponents.
  - c. Applying the properties of exponents to expressions with rational exponents
  - d. Solving radical equations
- Competency 7:**      **The student will demonstrate knowledge of complex numbers by:**
- a. Knowing the meaning of  $i$ .
  - b. Writing the square root of a negative number in terms of  $i$ .
- Competency 8:**      **The student will demonstrate knowledge of quadratic equations by:**
- a. Solving quadratic equations by factoring.
  - b. Solving quadratic equations by the square root method.
  - c. Solving quadratic equations by the quadratic formula.
  - d. Solving quadratic equations by completing the square.

