

## Placement, Prerequisite, Course Description, Course Objectives and Learning Outcomes – Math 72

**Placement:** It is important to know that the placement process may have placed you in the next class after your last high school class, WITHOUT using your placement test result.

Some students may be underprepared to succeed in this class.

Students will not be “socially promoted” in college. You must learn the material to pass.

If you suspect you are underprepared, please discuss your situation with the professor as early as possible.

- You can work extra hard and get extra help to learn the missing knowledge simultaneously with taking this class.
- You often can change to a lower class or have the instructor help you move you, depending on when you try to make the change.

**Prerequisite:** Credit for Math 45 (Beginning Algebra) with a grade of ABC.

### Course Description:

Delivers Intermediate Algebra for STEM and Business Majors. Investigates rational expressions and equations, systems of equations in two and three variables, absolute value equations and inequalities, radical expressions and equations, rational exponents, complex numbers, quadratic equations, graphs of linear and radical functions, parabolas, and circles. Requires graphing calculator. (Not open to students with credit in MATH 62, MATH 70, or equivalent.) [D]

### Course Objectives:

1. Student will simplify rational expressions using the operations of addition, subtraction, multiplication, and division.
2. Student will solve linear and compound inequalities and represent their solutions in three ways: interval notation, set-builder notation, and graphically on a number line.
3. Student will solve absolute-value equations and inequalities.
4. Student will solve linear systems of two and three equations and nonlinear systems of two equations by elimination and substitution, including applications.
5. Student will classify relations as functions and one-to-one functions, use function notation, and perform basic operations with functions, including composition and finding inverses, find domain, range, and x- and y- intercepts algebraically, and from a graph, evaluate and graph piecewise defined functions.
6. Student will solve polynomial and rational equations and inequalities in one variable.
7. Student will simplify expressions and solve equations involving rational exponents.
8. Student will simplify and perform operations on radical expressions, and solve radical equations, including applications.
9. Student will evaluate and graph radical functions.
10. Student will simplify and perform operations with complex numbers.
11. Student will identify quadratic equations and equations which are quadratic in form and then solve by factoring, completing the square, quadratic formula, and graphing, including applications.
12. Student will identify the number and nature of the roots of a quadratic equation using the discriminant.
13. Student will identify the vertex, intercept(s), axis of symmetry, maximum or minimum value, and graph the resulting parabola when given a quadratic function.

14. Student will use properties and definitions to manipulate exponential and logarithmic expressions, graph exponential and logarithmic functions, and solve exponential and logarithmic equations.
15. Student will solve a formula for a variable, and solve a variety of application problems within each of the core content areas.
16. Student will graph and write equations of circles in general form, and ellipses and hyperbolas centered at the origin.
17. Student will use and construct sequences and summation notation, and evaluate the result.
18. Student will demonstrate basic graphing calculator skills and/or algebraic methods to solve problems within each of the core content areas.

Student Learning Outcomes:

Upon successful completion of Math 72, the student should be able to:

1. Demonstrate knowledge and appropriate application of absolute value, polynomial, radical, rational, exponential, inverse, and logarithmic functions.
2. Analyze and graph functions and conics using algebraic methods and graphing calculator.
3. Recognize mathematical applications in everyday life and apply appropriate critical thinking and algebraic problem solving skills.