

## Algebra II Course Outline:

### **First Semester:**

1. Equations and Inequalities: representing functions, properties of real numbers, solving absolute value equations and inequalities, compound inequalities
2. Linear Relations and Functions: rate of change, graphing linear equations and absolute value equations, scatter plots and line of regression, parent functions and transformations
3. Systems of Equations and Inequalities: solving systems of equations by graphing, substitution, and elimination, optimization, linear programming
4. Quadratic Functions: graphing quadratic functions, solving quadratic equations by graphing, factoring, completing the square and the quadratic formula, complex numbers, the discriminant, quadratic inequalities
5. Polynomials and Polynomial Functions: operations with polynomials, synthetic and long division of polynomials

### **Second Semester:**

1. Polynomials and Polynomial Functions: graphing polynomial functions, solving polynomial equations, polynomial roots and zeros, the remainder theorem, the factor theorem, the rational zero theorem
2. Inverses and Radical Functions and Relations: operations on functions, square root functions, nth roots, operations with radicals, rational exponents, radical equations and inequalities
3. Exponential and Logarithmic Functions and Relations: graphing exponential functions, solving exponential equations and inequalities, logarithmic functions, solving logarithmic equations and inequalities, logarithmic properties, common and natural logarithms
4. Rational Functions and Relations: operations with rational expressions, graphing rational functions, solving rational equations and inequalities
5. Conic Sections: midpoint formula, distance formula, properties of parabolas and circles, graphing parabolas and circles
6. Trigonometric Functions: unit circle, trig. functions in right triangles, angle measures