



Year Long Course Plan

Department: Mathematics

Course: Algebra 410/411

Essential Learning Outcomes: After successfully completing this course, students will be able to:

1. Formulate questions from patterns and relationships to further understanding
2. Communicate and justify results using a variety of methods which include estimation, reasoning, logic, conjecture, and proof
3. Demonstrate mathematical literacy orally and in writing effectively and across disciplines
4. Perform and explain operations, their properties and applications on real numbers
5. Use technology to carry out computations
6. Use the Cartesian plane and algebraic procedures to graph lines, explore their relationships, and interpret the meaning
7. Use and apply formulas as appropriate
8. Organize a collection of one and two-dimensional data and use this data to formulate and analyze a hypothesis
9. Apply both theoretical and experimental probability to real life situations
10. Understand and translate between various forms of Algebraic notation
11. Solve linear equations, linear inequalities, quadratic equations, systems of linear equations and inequalities

<i>Quarter 1</i>	<i>Quarter 2</i>
<p>Unit 1: Tools of Algebra (ELO 1, 2, 3, 4, 5, 10)</p> <ul style="list-style-type: none"> • Using Variables • Exponents and Order of Operations • Exploring Real Numbers • Adding and Subtracting Real Numbers • Multiplying and Dividing Real Numbers • Distributive Property • ASSESSMENT: Written Test <p>Unit 2: Solving Equations (ELO 1, 2, 3, 5, 7, 10, 11)</p> <ul style="list-style-type: none"> • Solving One-Step Equations • Solving Two-Step Equations • Solving Multi-Step Equations • Solving Equations with Variables on Both Sides • Problem Solving Using Equations • ASSESSMENT: Written Test <p>Unit 3: Solving Inequalities (ELO 1, 2, 3, 5, 10, 11)</p> <ul style="list-style-type: none"> • Understanding Inequalities and Their Graphs • Solving Inequalities Using One Step • Solving Inequalities Using Many Steps • Compound Inequalities • Absolute Value Equations and Inequalities • ASSESSMENT: Written Test 	<p>Unit 4: Solving and Applying Proportions (ELO 1, 2, 3, 5, 7, 9, 10, 11)</p> <ul style="list-style-type: none"> • Ratio and Proportion • Proportions and Percent Equations • Percent of Change • Applying Ratios to Probability • ASSESSMENT: Written Test <p>Unit 5: Graphs and Functions (ELO 1, 2, 3, 5, 6, 7, 10)</p> <ul style="list-style-type: none"> • Relating Graphs to Events • Relations and Functions • Function Rules, Tables, and Graphs • ASSESSMENT: Written Test <p>Unit 6: Linear Equations and Their Graphs (ELO 1, 2, 3, 5, 6, 7, 8, 10)</p> <ul style="list-style-type: none"> • Rate of Change and Slope • Slope-Intercept Form • Standard Form • Parallel and Perpendicular Lines • Graphing Absolute Value Equations • ASSESSMENT: Written Test
<i>Quarter 3</i>	<i>Quarter 4</i>
<p>Unit 7: Systems of Equations and Inequalities (ELO 1, 2, 3, 5, 6, 10, 11)</p> <ul style="list-style-type: none"> • Solving Systems by Graphing • Solving Systems Using Substitution 	<p>Unit 10: Quadratic Equations and Functions (ELO 1, 2, 3, 5, 6, 7, 8, 10, 11)</p> <ul style="list-style-type: none"> • Solving Quadratic Equations Using Graphing • Solving Quadratic Equations Using Factoring

- Solving Systems Using Elimination
- Applications of Linear Systems
- Linear Inequalities
- Systems of Linear Inequalities
- ASSESSMENT: Written Test

Unit 8: Exponents and Exponential Functions
(ELO 1, 2, 3, 5, 8, 10)

- Understanding Exponents
- Zero and Negative Exponents
- Scientific Notation
- Multiplication Properties of Exponents
- Division Properties of Exponents
- ASSESSMENT: Written Test

Unit 9: Polynomials and Factoring
(ELO 1, 2, 3, 5, 10)

- Adding and Subtracting Polynomials
- Multiplying a Monomial and a Polynomial
- Factoring a Monomial from a Polynomial
- Multiplying Binomials
- Factoring Polynomials into the Product of Two Binomials
- Multi-Step Factoring of Polynomials
- ASSESSMENT: Written Test

- Solving Quadratic Equations Using the Quadratic Formula
- ASSESSMENT: Written Test

Unit 11: Radical Expressions and Equations
(ELO 1, 2, 3, 5, 7, 10, 11)

- Simplifying Radicals
- Distance and Midpoint Formulas
- Operations with Radical Expressions
- Solving Radical Equations
- ASSESSMENT: Written Test

Unit 12: Rational Expressions and Functions
(ELO 1, 2, 3, 5, 10)

- Simplifying Rational Expressions
- Multiplying and Dividing Rational Expressions
- Adding and Subtracting Rational Expressions
- ASSESSMENT: Written Test