LSU Dual Enrollment Program for Math

COURSE PROFILE

Content Revised 4-4-2022

**COURSE NAME: Algebra III (1 semester, prep for LSU’s Math 1021 College Algebra)**

**HIGH SCHOOL COURSE CODE: 160375\***

**PRIMARY ONLINE CONTENT SOURCE: *Algebra & Trigonometry, 2e,* *MyMathLab*, Kirk Trigsted**

**COURSE/UNIT CREDIT: ½ Carnegie Unit for fall semester**

**GRADE(S): 10, 11, or 12**

**\*This content described below is designed to be taught in the fall semester and then paired with Math 1021 College Algebra (1 Carnegie unit) for dual enrollment in the spring semester.**

**CHAPTERS**

**R – Review**

**1 – Equations and Inequalities**

**6 – An Introduction to Trigonometric Functions**

**7 – The Graphs of Trigonometric Functions**

**8 – Trigonometric Identities**

**9 – Applications of Trigonometry**

| **SECTION NAMES (NUMBER OF EXERCISES) AND LEARNING OBJECTIVES** |
| --- |
| **CHAPTER R: Review** |
| **R.1 Real Numbers (40)**  Understand and classify real numbers  Describe sets of numbers using set-builder notation and interval notation  Determine the intersection and union of sets and intervals  Understand absolute value and use it to find distance |
| **R.2 Order of Operations and Algebraic Expressions (56)**  Understand the properties of real numbers  Use exponential notation  Use the order of operations to simplify numeric and algebraic expressions |
| **R.3 Laws of Exponents; Radicals (75)**  Simplify exponential expressions involving integer exponents  Simplify radical expressions  Simplify exponential expressions involving rational exponents |
| **R.4 Polynomials (37)**  Understand the definition of a polynomial  Add and subtract polynomials  Multiply polynomials  Divide polynomials using long division |
| **R.5 Factoring Polynomials (55)**  Factor out a greatest common factor  Factor by grouping  Factor trinomials with a leading coefficient equal to one  Factor trinomials with a leading coefficient not equal to one  Factor using special factoring formulas |
| **R.6 Rational Expressions (59)**  Simplify rational expressions  Multiply and divide rational expressions  Add and subtract rational expressions  Simplify complex rational expressions |
| **CHAPTER 1: Equations, Inequalities, and Applications** |
| **1.1 Linear Equations (42)**  Find the least common denominator of an expression  Recognize linear equations  Solve linear equations with integer coefficients  Solve linear equations involving fractions  Solve linear equations involving decimals  Solve equations that lead to linear equations |
| **1.4 Quadratic Equations (39)**  Simplify radical expressions  Factor trinomials  Solve quadratic equations by factoring  Solve quadratic equations using the square root property  Solve quadratic equations using the quadratic formula  Use the discriminant to determine the type of solutions of a quadratic equation |
| **CHAPTER 6: An Introduction to Trigonometric Functions** |
| **6.1 An Introduction to Angles: Degree and Radian Measure (50)**  Understand degree measure  Understand radian measure  Convert between degree measure and radian measure  Find coterminal angles using degree measure  Find coterminal angles using radian measure |
| **6.3 Triangles (20)**  Classify triangles  Use the Pythagorean Theorem  Understand similar triangles  Understand the special right triangles |
| **6.4 Right Triangle Trigonometry (52)**  Understand the right triangle definitions of the trigonometric functions  Use the special right triangles  Understand the fundamental trigonometric identities  Understand cofunctions  Evaluate trigonometric functions using a calculator |
| **6.5 Trigonometric Functions of General Angles (84)**  Understand the four families of special angles  Understand the definitions of the trigonometric functions of general angles  Find the values of the trigonometric functions of quadrantal angles  Understand the signs of the trigonometric functions  Determine reference angles  Evaluate trigonometric functions of angles belonging to  families |
| **CHAPTER 7: The Graphs of Trigonometric Functions** |
| **7.1 Graphs of Sine and Cosine Functions (49)**  Perform operations on fractions containing *π*  Understand graph of the sine function and its properties  Understand graph of the cosine function and its properties  Determine properties and sketch graphs of form  and  Determine properties and sketch graphs of form  and  Determine properties and sketch graphs of form  and  Determine equation of a function of the form  and  given graph |
| **CHAPTER 8: Trigonometric Identities, Formulas, and Equations** |
| **8.1 Trigonometric Identities (36)**  Review and use the fundamental identities  Verify trigonometric identities |
| **CHAPTER 9: Applications of Trigonometry** |
| **9.1 Right Triangle Applications (18)**  Solve right triangles  Solve applied problems using right triangles |
| **9.2 The Law of Sines (30)**  Determine if the Law of Sines can be used to solve an oblique triangle  Use the Law of Sines to solve the SAA case or the ASA case  Use the Law of Sines to solve the SSA (ambiguous) case |
| **9.3 The Law of Cosines (27)**  Use a calculator to approximate trig and inverse trig expressions  Determine whether Law of Sines or Cosines should be used to solve an oblique triangle  Use the Law of Cosines to solve the SAS case  Use the Law of Cosines to solve the SSS case  Use the Law of Cosines to solve applied problems involving oblique triangles |
| **9.4 Area of Triangles (17)**  Determine the area of oblique triangles  Use Heron’s Formula to determine the area of an SSS triangle  Solve applied problems involving the area of triangles |