WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Algebra II
Course Number: 00239
Course Prerequisites: Algebra I – College Preparatory

Course Description: Algebra II is the continuation of Algebra concepts that are integral part of secondary mathematics courses. This course expands on the foundation of algebraic theory that was begun in Algebra I at a slower pace. It uses practical problems to connect algebra to the real world and apply the theory introduced in Algebra I, going from linear equations and inequalities to complex numbers. It includes the study and applications of quadratics including parabolas.
This course is limited to teacher recommendation. A final exam is required.

Suggested Grade Level: Grades 9-12
Length of Course: Two Semesters
Units of Credit: 1
PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:
CSPG #50 Mathematics
To find the CSPG information, go to CSPG
Certification verified by the WCSD Human Resources Department: ☒Yes ☐No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Academic
Mark Types: Check all that apply.
☒F – Final Average ☒MP – Marking Period ☒EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☒ NHS-National Honor Society
☒ UGPA-Non-Weighted Grade Point Average ☒ GPA-Weighted Grade Point Average

State Course Code: 02056
To find the State Course Code, go to State Course Code, download the Excel file for *SCED*, click on SCED 6.0 tab, and chose the correct code that corresponds with the course.

TEXTBOOKS AND SUPPLEMENTAL MATERIALS

Board Approved Textbooks, Software, and Materials:

Title:	envision Algebra 2
Publisher:	Pearson
ISBN #:	978-0-328-93156-9
Copyright Date:	2018
WCSD Board Approval Date:	6/29/2020

Supplemental Materials: Kutasoftware.com

Curriculum Document

WCSD Board Approval:

Date Finalized:	6/5/2020
Date Approved:	8/10/2020
Implementation Year:	2020-2021

SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

SCOPE AND SEQUENCE OF CONTENT, CONCEPTS, AND SKILLS

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Month Taught and Assessed for Mastery**
Solve linear equations.	A1.1.2.1.1, A1.1.2.1.2, A1.1.2.1.3	September October
Add and subtract polynomials	A1.1.1.5.1	September October
Multiply two polynomials.	A1.1.1.5.1	September October
Factor polynomials	A1.1.1.2.1, A1.1.1.5.2, A1.1.1.5.3	September October
Graphing linear functions	A1.1.2.1.1, A1.1.2.1.3, A1.2.2.1.1, A1.2.2.1.2, A1.2.2.1.3, A1.2.2.1.4	September October
Identify a quadratic parent function.	A2.2.2.2.1, A2.2.1.1.1	October October
Understand the graph of $f(x) = ax^2$.	A2.2.2.2.1,	October October
Interpret quadratic functions from tables.	A2.2.2.2.1	October October
Apply quadratic functions.	A2.2.2.2.1	October October
Compare the rate of change.	A2.2.2.2.1	October October
Understand the graph of $g(x) = x^2 + k$.	A2.2.2.2.1	October October
Understand the graph of $g(x) = (x – h)^2$.	A2.2.2.2.1	October October
Understand the graph of $a(x – h)^2 + k$.	A2.2.2.2.1	October October

Graph using vertex form.	A2.2.2.2.1	October October
Use vertex form to solve problems.	A2.2.2.2.1	October October
Relate c to the graph of $f(x) = ax^2 + bx + c$.	A2.2.2.2.1	October October
Graph a quadratic function in standard form.	A2.2.2.2.1	October October
Compare properties of quadratic functions.	A2.2.2.2.1	October October
Analyze the structure of different forms of quadratic functions.	A2.2.2.2.1	October October
Understand domain and range.	A2.2.1.1.1, A2.2.1.1.3	November December
Find x- and y-intercepts.	A2.2.1.1.1	November December
Identify positive and negative intervals.	A2.2.2.2.1	November December
Identify where a function increases or decreases.	A2.2.2.2.1	November December
Translate a function.	A2.2.2.2.1	November December
Reflect a function across the x- or y-axis.	A2.2.2.2.1	November December
Understand stretches and compressions.	A2.2.2.2.1	November December
Graph a combination of transformations.	A2.2.2.2.1	November December
Identify transformations from an equation.	A2.2.2.2.1	November December

Write an equation from a graph.	A2.2.2.2.1	November December
Solve a system of linear equations (elimination, substitution and Cramer's Rule).	A1.1.2.2.1, A1.1.2.2.2	November December
Solve a system of linear inequalities.	A1.1.2.2.1, A1.1.2.2.2	November December
Transform a quadratic function.	A2.2.1.1.4, A2.2.2.1	December January
Determine key features of a quadratic function.	A2.2.1.1.4, A2.2.2.1	December January
Write an equation of a parabola.	A2.2.1.1.4, A2.2.2.1	December January
Write an equation of a parabola given the graph.	A2.2.1.1.4, A2.2.2.1	December January
Write an equation of a transformed function.	A2.2.1.1.4, A2.2.2.1	December January
Find the vertex of a quadratic function in standard form.	A2.2.1.1.4, A2.2.2.1	December January
Graph a quadratic function in standard form.	A2.2.1.1.4, A2.2.2.1	December January
Interpret the graph of a quadratic function.	A2.2.1.1.4, A2.2.2.1	December January
Factor a quadratic expression.	A2.1.3.2.2	December January
Relate factors to zeros of a function.	A2.1.3.2.2, A2.2.1.1.4, A2.2.2.1.1,	December January
Solve quadratic equations by factoring.	A2.1.3.2.2, A2.2.1.1.4, A2.2.2.1.1,	December January
Find the zeros of a quadratic function.	A2.1.3.2.2, A2.2.1.1.4, A2.2.2.1.1,	December January

Determine positive or negative intervals.	A2.2.3.1.1, A2.2.3.1.2	December January
Write the equation of a parabola in factored form.	A2.1.3.2.2, A2.2.1.1.4, A2.2.2.1.1,	December January
Solve a quadratic equation using square roots.	A2.1.1.1.1, A2.1.1.1.2, A2.1.1.2.1, A2.1.3.1.1	December January
Add and subtract complex numbers.	A2.1.1.1.1, A2.1.1.1.2, A2.1.1.2.1, A2.1.3.1.1	December January
Multiply complex numbers.	A2.1.1.1.1, A2.1.1.1.2, A2.1.1.2.1, A2.1.3.1.1	December January
Simplify a quotient with complex numbers.	A2.1.1.1.1, A2.1.1.1.2, A2.1.1.2.1, A2.1.3.1.1	December January
Solve a quadratic equation with complex solutions.	A2.1.1.1.1, A2.1.1.1.2, A2.1.1.2.1, A2.1.3.1.1	December January
Use square roots to solve quadratic equations.	A2.1.3.1.1	December January
Use the quadratic formula to solve quadratic equations.	A2.1.3.1.1	December January
Identify the number of real-number solutions.	A2.1.3.1.1	December January
Interpret the discriminant	A2.1.3.1.1	December January
Use the discriminant to find a particular equation.	A2.1.3.1.1	December January
Classify polynomials	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Graph polynomial functions.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March

Add, subtract, and multiply polynomials.	A1.1.1.5.1	February March
Use long division to divide polynomials.	A2.1.2.2	February March
Use synthetic division to divide by x – a.	A2.1.2.2	February March
Relate P(a) to the Remainder of P(x) ÷ (x – a).	A2.1.2.2	February March
Use the Remainder Theorem to evaluate polynomials.	A2.1.2.2	February March
Check whether x – a is a factor of P(x).	A2.1.2.2	February March
Use zeros to graph a polynomial functions.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Understand how a multiple of zero can affect a graph.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Find real and complex zeros.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Solve polynomial equations.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Solve a polynomial inequality by graphing.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Identify possible rational solutions.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Use the Rational Root Theorem.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March
Find all Complex Roots.	A2.2.1.1.4, A2.2.2.1.1, A2.2.2.1.3, A2.2.2.1.4	February March

Write equivalent rational expressions.	A2.1.2.2.2	March April
Simplify a rational expression.	A2.1.2.2.2	March April
Multiply rational expressions.	A2.1.2.2.2	March April
Multiply a rational expression by a polynomial.	A2.1.2.2.2	March April
Divide rational expressions.	A2.1.2.2.2	March April
Add rational expressions with like denominators.	A2.1.2.2.2	March April
Identify the least common multiple of polynomials.	A2.1.2.2.2	March April
Add rational expressions with unlike denominators.	A2.1.2.2.2	March April
Subtract rational expressions.	A2.1.2.2.2	March April
Find the rate.	A2.1.2.2.2	March April
Simplify a compound fraction.	A2.1.3.1.2	March April
Solve a rational equation.	A2.1.3.1.2	March April
Solve a work-rate problem.	A2.1.3.1.2	March April
Identify an extraneous solution.	A2.1.3.1.2	March April
Solve problems with extraneous solutions.	A2.1.3.1.2	March April
Solve a rate problem.	A2.1.2.1.1	April May
Find all Real nth roots.	A2.1.2.1.1	April May
Understand rational exponents.	A2.1.2.1.1	April May
Evaluate expressions with rational exponents.	A2.1.2.1.1	April May

Simplify nth roots.	A2.1.2.1.1	April May
Use nth roots to solve equations.	A2.1.2.1.1	April May
Use nth roots to solve problems.	A2.1.2.1.1	April May
Use properties of exponents.	A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3 S	April May
Use properties of exponents to rewrite radicals.	A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3 S	April May
Rewrite the product or quotient of a radical.	A2.1.1.2, A2.1.2.1, A2.1.3.1, A2.1.3.1.2, A-REI.2	April May
Add and subtract radical expressions.	A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3 S	April May
Multiply binomial radical expressions.	A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3 S	April May
Rationalize a binomial denominator.	A2.1.2.1.1, A2.1.2.1.2, A2.1.2.1.3 S	April May
Graph square root and cube root functions.	A2.2.2.1.4	April May
Solve an equation with one radical	A2.1.3.1.2	April May
Identify an extraneous solution from a radical equation.	A2.1.3.1.2	April May
Solve an equation with rational exponents.	A2.1.3.1.2	April May
Add and subtract functions.	A2.1.2.1.2, A2.1.2.1.3	April May
Multiply functions.	A2.1.2.1.2, A2.1.2.1.3	April May
Divide functions.	A2.1.2.1.2, A2.1.2.1.3	April May
Compose functions.	A2.1.2.1.2, A2.1.2.1.3	April May

ASSESSMENTS

PSSA Academic Standards, Assessment Anchors, and Eligible Content: The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

Formative Assessments: The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

Effective formative assessments for this course include: Suggested but not limited to: Bell Ringers, Exit Ticket, Cooperative Learning, Observations, Written work, Quizzes, Oral response, Self-evaluation, Homework

Summative Assessments: The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

Effective summative assessments for this course include: Suggested but not limited to: Performance Assessment, Tests, and Projects