WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Algebra II

Course Number: 00239

Course Prerequisites: Algebra I CP

Course Description:
Algebra II is the continuation of Algebra concepts are an 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: 9 - 12

Length of Course: _____ One Semester X Two Semesters _____Other

(Describe)

Units of Credit: 1 **(Insert *NONE* if appropriate.)**

PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s)

(Insert certificate title and CSPG#) Mathematics (7 – 12) Mathematics CSPG #50

Certification verified by WCSD Human Resources Department:

X Yes _____ No

Board Approved Textbooks, Software, Materials:
Title:
Publisher:
ISBN #:
Copyright Date:
Date of WCSD Board Approval:

BOARD APPROVAL:

Date Written: January 22, 2015, Revised January 9, 2017

Date Approved: February 13, 2017

Implementation Year: 2015 - 2016

Suggested Supplemental Materials:
Graphing calculator, Scientific calculator, PSSA and Keystone formula sheets, Geometry Sketchpad, probability dice, spinner, cards, ruler, Kuta software, SAS Portal, and Study Island

Course Standards

PA Core Standards: (List by Number and Description)
2.1 Numbers and Operations
2.2 Algebraic Concepts
2.4 Measurement, Data, and Probability

WCSD Academic Standards: None

Industry or Other Standards: None

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

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

SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

(List Objectives, PA Standards #'s, Other Standards (see samples at end))

PA Standard: 2.1 Numbers and Operations

Eligible Content	**Performance Indicators**
A2.1.1.1.1	Simplify/write square roots in terms of i (e.g., $\sqrt{-24} = 2i\sqrt{6}$).
A2.1.1.1.2	Simplify/evaluate expressions involving powers of i (e.g., $i^6 + i^3 = -1 - i$).
A2.1.1.2.1	Add and subtract complex numbers (e.g., $(7 - 3i) - (2 + i) = 5 - 4i$).
A2.1.1.2.2	Multiply and divide complex numbers (e.g., $(7 - 3i)(2 + i) = 17 + i$).
A2.1.2.1.1	Use exponential expressions to represent rational numbers.
A2.1.2.1.2	Simplify/evaluate expressions involving positive and negative exponents and/or roots (may contain all types of real numbers— exponents should not exceed power of 10).
A2.1.2.1.3	Simplify/evaluate expressions involving multiplying with exponents (e.g., $x^6 \cdot x^7 = x^{13}$), powers of powers (e.g., $(x^6)^7 = x^{42}$), and powers of products (e.g., $(2x^2)^3 = 8x^6$). Note: Limit to rational exponents.
A2.1.2.1.4	Simplify or evaluate expressions involving logarithms and exponents (e.g., $\log_2 8 = 3$ or $\log_4 2 = ½$).

PA Standard: 2.2 Algebraic Concepts

Eligible Content	**Performance Indicators**
A2.1.2.2.1	Factor algebraic expressions, including difference of squares and trinomials. Note: Trinomials limited to the form ax^2+bx+c where a is not equal to 0.
A2.1.2.2.2	Simplify rational algebraic expressions.
A2.1.3.1.1	Write and/or solve quadratic equations (including factoring and using the Quadratic Formula).
A2.1.3.1.2	Solve equations involving rational and/or radical expressions (e.g., $10/(x + 3) + 12/(x - 2) = 1$ or $\sqrt{x^2 + 21x} = 14$).
A2.1.3.1.3	Write and/or solve a simple exponential or logarithmic equation (including common and natural logarithms).
A2.1.3.1.4	Write, solve, and/or apply linear or exponential growth or decay (including problem situations).
A2.1.3.2.1	Determine how a change in one variable relates to a change in a second variable (e.g., $y = 4/x$; if x doubles, what happens to y?).
A2.1.3.2.2	Use algebraic processes to solve a formula for a given variable (e.g., solve $d = rt$ for r).
A2.2.1.1.1	Analyze a set of data for the existence of a pattern, and represent the pattern with a rule algebraically and/or graphically.
A2.2.1.1.2	Identify and/or extend a pattern as either an arithmetic or geometric sequence (e.g., given a geometric sequence, find the 20th term).
A2.2.1.1.3	Determine the domain, range, or inverse of a relation.
A2.2.1.1.4	Identify and/or determine the characteristics of an exponential, quadratic, or polynomial function (e.g., intervals of increase/decrease, intercepts, zeros, and asymptotes).
A2.2.2.1.1	Create, interpret, and/or use the equation, graph, or table of a polynomial function (including quadratics).
A2.2.2.1.2	Create, interpret, and/or use the equation, graph, or table of an exponential or logarithmic function (including common and natural logarithms).
A2.2.2.1.3	Determine, use, and/or interpret minimum and maximum values over a specified interval of a graph of a polynomial, exponential, or logarithmic function.

A2.2.2.1.4	Translate a polynomial, exponential, or logarithmic function from one representation of a function to another (graph, table, and equation).
A2.2.2.2.1	Identify or describe the effect of changing parameters within a family of functions (e.g., $y = x^2$ and $y = x^2 + 3$, or $y = x^2$ and $y = 3x^2$).

PA Standard: 2.4 Measurement, Data, and Probability

Eligible Content	**Performance Indicators**
A2.2.3.1.1	Draw, identify, find, interpret, and/or write an equation for a regression model (lines and curves of best fit) for a scatter plot.
A2.2.3.1.2	Make predictions using the equations or graphs of regression models (lines and curves of best fit) of scatter plots.
A2.2.3.2.1	Use combinations, permutations, and the fundamental counting principle to solve problems involving probability.
A2.2.3.2.2	Use odds to find probability and/or use probability to find odds.
A2.2.3.2.3	Use probability for independent, dependent, or compound events to predict outcomes.

ASSESSMENTS

PSSA Assessment Anchors Addressed: The teacher must be knowledgeable of the PDE Assessment Anchors and/or Eligible Content and incorporate them into this planned instruction. Current assessment anchors can be found at pde@state.pa.us.

Formative Assessments: The teacher will develop and use standards-based assessments throughout the course.

Portfolio Assessment: _____ Yes __X__ No

District-wide Final Examination Required: __X__ Yes _____ No

Course Challenge Assessment (Describe): 84% or higher on the Algebra II Final Exam

REQUIRED COURSE SEQUENCE AND TIMELINE

(Content must be tied to objectives)

Content Sequence	Dates

See curriculum mapping

Objectives:

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeating reasoning

WRITING TEAM: WCSD Mathematics Teachers

WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? __X__ Yes _____ No
2. Does this course issue a mark/grade for the report card? __X__ Yes _____ No
3. Does this course issue a Pass/Fail mark? _____ Yes __X__ No
4. Is the course mark/grade part of the GPA calculation? __X__ Yes _____ No
5. Is the course eligible for Honor Roll calculation? __X__ Yes _____ No
6. What is the academic weight of the course?

   _____ No weight/Non credit __X__ Standard weight

   _____ Enhanced weight (Describe)