Warren County School District

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: ~~**Algebra I**~~ **Algebra I – College Preparatory**

Course Number: ~~**00221**~~

Course Description and Prerequisites: Algebra I – College Preparatory is the first course in a three-year sequence of Algebra I, Algebra II and Geometry. This course provides an in-depth look at the foundation of algebraic theory that will be expanded in Algebra II and Geometry. It uses practical problems to apply the theory and connect algebra to the real world. Algebra I – College Preparatory is intended for students planning on pursuing higher education, particularly those whose primary interests are in fields that require a strong background in math or science. Topics will include computation, measurement and estimation. Solving and graphing one variable equations, solving systems of linear equations with two variables, exponents, factoring rational expressions and problem solving strategies. Technology applications require a strong background using algebra skills. Grade of 70% or higher in Pre-Algebra or Honors Algebra I is recommended, or with a recommendation by the principal or guidance counselor.

Suggested Grade Level: **9**

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 50_____

Certification verified by WCSD Human Resources Department:

_**X**_Yes ____No

Board Approved Textbooks, Software, Materials:
Title: Algebra I
Publisher: Prentice Hall
ISBN #: 0 13 201577-3
Copyright Date: 2007
Date of WCSD Board Approval: November 13, 2006

BOARD APPROVAL:

Date Written: 06-07

Date Approved: May 14, 2007

Implementation Year: 2007-2008

Suggested Supplemental Materials: Scientific calculator, Graphing calculator, Software and Computers

Course Standards

PA Academic Standards:

2.1.11 – Numbers, Number Systems and Number Relationships
2.2.11 – Computation and Estimation
2.4.11 – Mathematical Reasoning and Connections
2.5.11 – Mathematical Problem Solving and Communication
2.6.11 – Statistics and Data Analysis
2.7.11 – Probability and Predictions
2.8.11 – Algebra and Functions
2.10.11 - Trigonometry

WCSD Academic Standards: None

Industry or Other Standards: None

WCSD EXPECTATIONS

WCSD K-12 Expectations for instruction in writing, reading, mathematics and, technology have been developed and revised annually. The teacher will integrate all WCSD Expectations into this planned instruction

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

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

SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

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

Specific Educational Objectives to be Taught:

The student will be able to:

I. Statistics

- Find the mean, median, mode from data and frequency distribution (2.6.11 B)
- Compute the range, variance, and standard deviation of a set of data (2.6.11 A)
- Interpolate and extrapolate from a set of data (2.6.11 B & E)
- Determine the validity of data and decide bias of statistical data (2.6.11 C)
- Use a scientific calculator to find measures of central tendencies and variance (2.6.11 B)

II. Probability

- Find probability for simple and compound events (2.7.11 A & B)
- Probability of dependent and independent events (2.7.11 B)
- Determine the odds of an event (2.7.11 B)
- Solve problems using Venn Diagrams (2.7.11 B)
- Generalize and justify their results (2.7.11 A)

III. Computation, Measurement and Estimation

- Accurately use tools of measurement (rulers) (2.2.11 A)
- Estimate answers and determine the amount of error in an estimated answer (2.2.11 B)
- Use concepts of opposites and absolute value (2.1.11 A)
- Add, subtract, multiply, and divide real numbers (2.1.11 A)
- Use the order of operations to solve algebraic expressions (2.8.11 H)

IV. Reasoning

- Identify postulates, theorems (2.4.11. E)
- Test validity of statements using truth tables (2.4.11 A & C)
- Solve problems using inductive and deductive reasoning (2.4.11 D)
- Prove simple algebraic proofs (2.4.11 B)

V. Problem Solving and Communication

- Simplify algebraic expressions by combining like terms (2.5.11 A)
- To solve equations and inequalities (2.5.11 D)
- To translate a word statement to an equation (2.5.11 A & B)
    1. show all steps
    2. written explanation of solutions

VI. Linear Equations

- Graph linear equations (2.8.11 F)
- Determine the slope given two points, a graph, or an equation (2.8.11 K)
- Determine X-intercept and Y-intercept of a linear equation (2.8.11 K)
- Determine an equation of a line (2.8.11 L)
- Identify functions (2.8.11 N)
- Determine domain and range (2.8.11 O)
- To solve systems of linear equation (2.8.11 R)
    1. graphing
    2. addition/subtraction
    3. substitution
    4. linear combinations
    5. Cramer's Rule

6. matrices

VII. Factoring
- Multiply polynomials (2.8.11 S)
- Factor a polynomial completely (2.8.11 T)
- Solve polynomial equations by factoring (2.8.11 H)

VIII. Rational Expressions
- To simplify rational expressions (2.5.11 A)
- Use synthetic division to simplify rational expressions (2.5.11 C)
- To solve equations involving proportions (2.10.11 A)
- To solve rational equations (2.5.11 A)

IX. Quadratic Equations
- Determine the maximum/minimum and the vertex of a quadratic function (2.8.11 S)
- Find the square root of numbers with rational square roots (2.8.11 N)
- Solve quadratic equations by completing the square (2.8.11 N)
- Use the quadratic formula to solve quadratic equations (2.8.11 T)
- Use the discriminant to determine the nature and number of solutions of a quadratic equation (2.8.11 S)

X. Polynomial and Rational Equations (introduce and practice)
- Polynomial and rational equations (2.8.11 S)
- Use geometric figures to solve problems (Pythagorean) (2.10.11 A)

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: Course challenge assessment will be based on activities and exams that measure student proficiency as the course standards at 84%

REQUIRED COURSE SEQUENCE AND TIMELINE

(Content must be tied to objectives)

Days	Content Sequence
10 days	I. Statistics (master)
5 days	II. Probability (master)
10 days	III. Computation, Measurement and Estimation
10 days	IV. Reasoning
45 days	V. Problem Solving and Communication
30 days	VI. Linear Equations
15 days	VII. Factoring
10 days	VIII. Rational Expressions
20 days	IX. Quadratic Equations
25 days	X. Polynomial and Rational Equations (introduce and practice)
180 days	

WRITING TEAM: Math 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)_____