Winburn Middle School
Course Syllabus

Instructor: Frank Donnelly	**Course:** Algebra II (270311)
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Course Description Algebra II:

*Course Required for Graduation. This course is the study of high school Algebra II content. Upon completion of the course, students should be able to: (1) Understand properties of complex numbers; (2) Solve quadratic equations with real coefficients that have complex solutions; (3) Use matrices to represent and manipulate data; (4) Perform operations with matrices; (5) Interpret expressions that represent a quantity in terms of its context; (6) Use the structure of an expression to identify ways to rewrite it and consistently look for opportunities to rewrite expressions in equivalent forms; (7) Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression; (8) Identify roots of polynomials when suitable factorizations are available. Know these roots become the zeros (x-intercepts) for the corresponding polynomial function; (9) Create equations and inequalities in one variable and use them to solve problems; (10) Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales; (11) Create a system of equations or inequalities to represent constraints within a modeling context. Interpret the solution(s) to the corresponding system as viable or nonviable options within the context; (12) Rearrange formulas to solve a literal equation, highlighting a quantity of interest, using the same reasoning as in solving equations; (13) Solve and justify equations in one variable. Justify the solutions and give examples showing how extraneous solutions may arise; (14) Solve quadratic equations in one variable; (15) Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically; (16) Understand properties and key features of functions and the different ways functions can be represented; (17) Understand average rate of change of a function over an interval; (18) Graph functions expressed symbolically and show key features of the graph, with and without using technology (computer, graphing calculator); (19) Write a function that describes a relationship between two quantities; (20) Understand the effects of transformations on the graph of a function; (21) Find inverse functions; (22) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents with the use of technology; (23) Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function; (24) Represent the distribution of data with plots on the real number line (stem plots, dot plots, histograms and box plots); (25) Use statistics appropriate to the shape of the numerical data distribution to compare center (median, mean) and spread (interquartile range when comparing medians and standard deviation when comparing means) of different data distributions; (26) Interpret differences in shape, center and spread in the context of the distributions of the numerical data, accounting for the presence and possible effects of extreme data points (outliers); (27) Summarize categorical data for two or more categories in frequency tables. Calculate and interpret joint, marginal and conditional relative frequencies (probabilities) in the context of the data, recognizing possible associations and trends in the data; (28) Understand statistics as a process for making inferences and justifying conclusions about population parameters based on a random sample from that population; (29) Decide if a specified model is consistent with the results from a simulation; (30) Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each; (31) Use data from a sample survey to estimate a population mean or proportion and explain how bias may be involved in the process; (32) Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between estimates or statistics are significant; (33) Describe events as subsets of a sample space; (34) Understand the concept of independence; (35) Understand the concept of conditional probability; and (37) Use permutations and combinations to compute probabilities.

Course Objective

This course should be designed to meet the high school graduation credit for Algebra II and to build a solid foundation necessary for future mathematics courses. This course contains modeling standards.

The course design follows the FCPS district pacing guide and curriculum framework, including common assessments and semester finals. Upon course completion, students should be able to meet all Kentucky Academic Standards for Algebra 2.

A **cumulative final** is required for each semester. The score will count in the grade distribution.

Texts
enVision Algebra II (Savvas). All students have access to an online textbook.

Supplies
Students will require a graph paper notebook or graph paper composition notebook specifically for this course. Students will also need a pencil each day in class. All other materials will be provided.

Course Information/ Sequence of Learning

1. Linear Functions and Systems
2. Quadratic Functions and Equations
3. Polynomial Functions
4. Rational Functions
5. Rational Exponents and Radical Functions
6. Exponential Functions and Logarithmic Functions
7. Trigonometric Functions
8. Trigonometric Equations and Identities
9. Conic Sections
10. Matrices
11. Data Analysis and Statistics
12. Probability

Grading Policy

Our goal as educators is to provide all students the best education available in order to prepare every student to lead a productive life.
Grading is not about a number; instead, it is a reflection of what a student has learned about the curriculum taught.
A 90-100
B 80-89
C 70-79
D 60-69
F 0-59
1. Grading Principles
a. Teachers will not assign grades in a punitive manner to address misbehavior.
b. All assignments must be aligned to a standard and grade level appropriate.
c. No extra credit assignments, grades or bonus points on assignments shall be given.
d. When students fail to turn in an assignment on the due date, the teacher will mark an "m" for missing in the grade book which constitutes a zero for the assignment. Students shall have the opportunity to submit missing work by the end of the grading period in which the assignment was assigned.
e. Students who fall below a 50% average for the quarter shall have an adjusted percentage of 50F before posting final quarter grades.
f. Students who received a failing grade will have at least until midterm of the following quarter to bring their grade up to a 60D.
g. Students will NOT have the opportunity to make up missing quarter 4 work after

the quarter ends. *Grade recovery may be possible if summer school sessions are offered.
h. Teachers must provide documentation of parent contact within one week of posting a failing final quarter grade and with information about the opportunity to submit missing assignments. This documentation must be recorded in PLP.
i. Teachers of IEP/504/GSSP shall adhere to the student's individual plan.

j. Any class that uses a pass/fail system will implement a rubric to determine course success or failure.

2. Grading Practices
a. Grade entry shall fall into two categories: formative and summative.
b. Formative grades shall be weighted 20% and include but not be limited to graded learning checks, notebook/binder checks, class assignments, etc.
i. There shall be a minimum of 9 formative grades each nine weeks.
ii. Formative grades shall be entered into Infinite Campus within 5 workdays of the due date of the assignment.

c. Summative grades shall be weighted 80% and include but not be limited to end-of-unit exams, projects, common assessments, semester finals, etc.

i. There shall be a minimum of 2 summative grades each nine weeks.
ii. Summative grades shall be entered into Infinite Campus within 10 workdays of the due date of the assignment.

d. All graded assignments shall be weighted as a 1. All non-graded assignments shall be weighted as a 0.