



**Algebra II (Career Prep) Syllabus
CHS Mathematics Department**

Contact Information: Parents may contact me by phone, email, or visiting the school.

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CCSD Vision Statement: The Chillicothe City School District will provide tomorrow's leaders with a high quality education by developing high expectations and positive personal relationships among students, staff, and community members.

CCSD Mission Statement: The Chillicothe City School District empowers students to learn, to lead, and to serve.

Course Description and Prerequisite(s) from Course Handbook:

Algebra II (Career Prep) - 269

State Course #: 110302

Prerequisite: Algebra I and Geometry

Required Option

Grade: 10-11

Graded Conventionally

Credit: 1

Course Description:

Building on their work with linear, quadratic, and exponential functions, students are introduced to a repertoire of functions to include polynomial, rational, and radical functions. Students work closely with the expressions that define the functions, and continue to expand and hone their abilities to model situations and to solve equations, including solving quadratic equations over the set of complex numbers and solving exponential equations using the properties of logarithms. The Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations.

Learning Targets: Defined below for clarity are the Unit Titles, Big Ideas of every Unit taught during this course, and the Essential Questions to be answered to better understand the Big Ideas. A student's ability to grasp and answer the Essential Questions will define whether or not he or she adequately learns and can apply the skills found in Big Ideas. This will ultimately define whether or not a student scores well on assessments administered for this course.

- **1st Quarter**

- **Unit I Title: Equations and Inequalities**

- **Big Idea #1:** I can use the properties of equality to solve equations.
 - *Essential Question #1: How do I use the order of operations to evaluate expressions?*
 - *Essential Question #2: How do I classify real numbers and use the properties of real numbers to evaluate expressions?*
 - *Essential Question #3: How do I solve equations using the properties of equality?*
 - **Big Idea #2:** I can solve absolute value equations.
 - *Essential Question #1: How do I evaluate expressions involving absolute values?*
 - *Essential Question #2: How do I solve absolute value equations?*
 - **Big Idea #3:** I can solve inequalities, compound inequalities, and absolute value inequalities.
 - *Essential Question #1: How do I interpret and use interval notation?*
 - *Essential Question #2: How do I solve one-step inequalities and multi-step inequalities?*
 - *Essential Question #3: How do I solve compound inequalities and absolute value inequalities?*

- **Unit II Title: Linear Relations and Functions**

- **Big Idea #1:** I can identify the mathematical domains and ranges of functions.
 - *Essential Question #1: How do I analyze relations and functions?*
 - *Essential Question #2: How do I identify linear relations and functions and write linear equations in standard form?*
 - *Essential Question #3: How do I find rate of change?*
 - **Big Idea #2:** I can identify and sketch graphs of parent functions.

- *Essential Question #1: How do I write equations of parallel and perpendicular lines to a given line?*
 - *Essential Question #2: How are roots of equations and zeros of functions related?*
 - *Essential Question #3: How is direct variation related to linear functions?*
 - **Big Idea #3:** I can make and interpret scatter plots and fit the graph of a function to the data.
 - *Essential Question #1: How do I model data using lines of regression?*
 - *Essential Question #2: How do I understand correlation vs. causation?*
- **2nd Quarter**
 - **Unit III Title: Systems of Equations and Inequalities**
 - **Big Idea #1:** I can solve systems of equations and inequalities using a variety of methods, including technology.
 - *Essential Question #1: How do I recognize and classify systems of equations?*
 - *Essential Question #2: How do I solve systems of equations using the following methods: graphing, substitution, elimination?*
 - *Essential Question #3: How do I solve systems of inequalities by graphing?*
 - **Big Idea #2:** I can recognize matrices and perform operations with matrices.
 - *Essential Question #1: How do I add, subtract, and multiply matrices?*
 - *Essential Question #2: How do I compute the determinant of a square matrix?*
 - **Unit IV Title: Quadratic Functions and Relations**
 - **Big Idea #1:** I can graph quadratic functions and solve quadratic equations by graphing.
 - *Essential Question #1: How do I find and interpret the maximum and minimum values of a quadratic function?*
 - *Essential Question #2: How do I solve quadratic equations by graphing?*
 - *Essential Question #3: How do I estimate solutions of quadratic equations by graphing?*
 - **Big Idea #2:** I can solve quadratic equations using a variety of methods.
 - *Essential Question #1: How do I solve quadratic equations by factoring?*

- *Essential Question #2: How do I solve quadratic equations by completing the square?*
 - *Essential Question #3: How do I solve quadratic equations by completing the square?*
 - *Essential Question #4: How do I solve quadratic equations by using the Quadratic Formula?*
- **Big Idea #3:** I can recognize the transformations of a quadratic function.
 - *Essential Question #1: How do I write a quadratic function in vertex form?*
 - *Essential Question #2: How do I recognize the transformations of a quadratic function written in vertex form?*
- **MID-TERM EXAM**
- **3rd Quarter**
 - **Unit V Title: Polynomials and Polynomial Functions**
 - **Big Idea #1:** I can perform operations with monomials and polynomials.
 - *Essential Question #1: How do I multiply, divide, and simplify monomials and expressions involving powers?*
 - *Essential Question #2: How do I add, subtract, and multiply polynomials?*
 - *Essential Question #3: How do I divide polynomials using long division and synthetic division?*
 - **Big Idea #2:** I can analyze graphs of polynomial functions.
 - *Essential Question #1: How do I identify general shapes of graphs of polynomial functions?*
 - *Essential Question #2: How do I graph polynomial functions and locate their zeros and find relative maxima and minima?*
 - **Big Idea #3:** I can solve polynomial equations by factoring.
 - *Essential Question #1: How do I factor polynomials using a variety of strategies and factoring patterns?*
 - *Essential Question #2: How do I solve polynomial equations using factoring strategies and factoring patterns?*
 - **Unit VI Title: Inverses and Radical Functions and Relations**
 - **Big Idea #1:** I can perform operations with two functions and find and interpret the inverse of a relation.
 - *Essential Question #1: How do I find the sum, difference, product, and quotient of functions?*
 - *Essential Question #2: How do I find the composition of functions?*

- *Essential Question #3: How do I find the inverse of a relation (or function), then determine whether the inverse relation is an inverse function?*
 - **Big Idea #2:** I can analyze radical expressions and functions.
 - *Essential Question #1: How do I graph and analyze square root functions and inequalities?*
 - *Essential Question #2: How do I simplify radicals?*
 - *Essential Question #3: How do I approximate radicals using a calculator?*
 - **Big Idea #3:** I can solve radical equations.
 - *Essential Question #1: How do I simplify radical expressions, add, subtract, multiply, and divide radical expressions?*
 - *Essential Question #2: How do I write expressions with rational exponents in radical form and vice versa?*
 - *Essential Question #3: How do I solve equations and inequalities containing radicals?*
 - **4th Quarter**
 - **Unit VII Title: Exponential and Logarithmic Functions and Relations**
 - **Big Idea #1:** I can graph exponential functions and solve exponential equations and inequalities.
 - *Essential Question #1: How do I graph exponential growth and decay functions?*
 - *Essential Question #2: How do I solve exponential equations?*
 - *Essential Question #3: How do I solve exponential inequalities?*
 - **Big Idea #2:** I can evaluate logarithms and solve logarithm equations and inequalities.
 - *Essential Question #1: How do I evaluate logarithmic expressions and graph logarithmic functions?*
 - *Essential Question #2: How do I solve logarithmic equations?*
 - *Essential Question #3: How do I solve logarithmic inequalities?*
 - **Big Idea #3:** I can simplify expressions using the properties of logarithms.
 - *Essential Question #1: How do I use common logarithms to simplify expressions?*
 - *Essential Question #2: How do I use natural logarithms to simplify expressions?*
 - **Unit VIII Title: Rational Functions and Relations**

- **Big Idea #1:** I can simplify rational expressions and complex fractions.
 - *Essential Question #1: How do I multiply and divide rational expressions?*
 - *Essential Question #2: How do I add and subtract rational expressions?*
 - *Essential Question #3: How do I recognize and simplify a complex fractions?*
- **Big Idea #2:** I can graph rational functions.
 - *Essential Question #1: How do I know if, or when, a rational function is undefined?*
 - *Essential Question #2: How do I graph reciprocal functions?*
 - *Essential Question #3: What are asymptotes and how are they useful when graphing rational functions?*
- **Big Idea #3:** I can recognize the variation functions.
 - *Essential Question #1: How do I recognize and solve direct and joint variation problems?*
 - *Essential Question #2: How do I recognize and solve inverse and combined variation problems?*
- **END OF COURSE EXAM**

Course Materials:

- Google Chromebook
- Lined notebook paper
- Folder to keep notes/papers in

Textbook:

- Glencoe Algebra 2

Electronic Resources:

- Inexpensive scientific calculator (i.e. TI-30)

Course Expectations:

- This course will require dedication and a strong effort. What you put into Algebra II is exactly what you will get out of it. Algebra II is not only a building block for your subsequent math courses, but also the third math course on your high school transcript, which means it affects your high school GPA. Grades are earned in this classroom and I am there to help you earn the best grade possible. This classroom is a partnership and will only work if we all work together. I am always available for extra help after school or through email. We will move at a quick pace through our syllabus so it is vital that you keep up with

notes and assignments. I am looking forward to this school year and getting to know all of you!

Grading:

Unit Exams	50%
Assessments (Including: Quizzes, Essays, Labs, and Projects)	30%
Class work/Homework	20%

- Each nine week's grade comprises 20% of a student's final grade.
- The Mid-Term Exam and End of Course Exam each comprise 10% of a student's final grade.

Grading Scale:

The grading scale for Chillicothe High School can be found in the student handbook or online at

<http://www.chillicothe.k12.oh.us/1/Content2/studenthandbook>.

Late Work: Late work will be subject to the Board-adopted policy on assignments that are submitted late (to be reviewed in class).

- Regardless of the absence type (excused, unexcused, OSS, etc.), students are expected to make up work and be held accountable for learning all material they missed.
- Any student who is absent from school will receive one (1) additional day for every day he/she missed to make up his/her work for full credit (100%).
- Any student who exceeds the allotted time to turn in an assignment for full credit may still submit work late for partial credit.
 - Any student who turns in work up to 1 week late must at least be given the opportunity to earn 75% on that assignment.
 - Any student who turns in work between 1 and 2 weeks late must at least be given the opportunity to earn 60% on that assignment.
- The end of the 9 weeks is the cut off point for teachers to accept late work from students for full or partial credit unless the teacher decides to give the student an incomplete for the 9 weeks due to extenuating circumstances.

Performance Based Section: Writing

Assignments/Exams/Presentations/Technology

One or more of the End of Unit Exams may be Performance Based. According to the Ohio Department of Education, "Performance Based Assessments (PBA) provides authentic ways for students to demonstrate and apply their understanding of the content and skills within the standards. The performance based assessments will provide formative and summative information to inform instructional decision-making and help students move

forward on their trajectory of learning.” Some examples of Performance Based Assessments include but are not limited to portfolios, experiments, group projects, demonstrations, essays, and presentations.

CHS Algebra II Career Prep Course Syllabus

After you have reviewed the preceding packet of information with your parent(s) or guardian(s), please sign this sheet and return it to me so that I can verify you understand what I expect out of each and every one of my students.

Student Name (please print):

Student Signature:

Parent/Guardian Name (please print):

Parent/Guardian Signature:

Date:
