



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

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

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- Google Classroom

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 (College Prep) - 261

State Course #: 11030273

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 extend their 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. Successful completion of this course is needed to take Physics and/or Honors Chemistry.

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: Systems and Matrices**
 - **Big Idea #1:** I can solve systems of equations and inequalities.
 - *Essential Question #1:* How do I solve a system of equations and system of inequalities graphically?
 - *Essential Question #2:* What methods can I use to solve a system of equations and system of inequalities algebraically?
 - *Essential Question #3:* How can I use systems of equations and systems of inequalities in the real-world?
 - **Big Idea #2:** I can use matrix algebra to manipulate and model data.
 - *Essential Question #1:* How can I use matrices to represent and manipulate data?
 - *Essential Question #2:* When and how do I added, subtracted, and multiplied matrices?
 - *Essential Question #3:* What is the role of the determinant and how do I find one?
 - **Big Idea #3:** I can solve systems of equations using matrices.
 - *Essential Question #1:* How do I use Cramer's Rule to solve linear systems of equations?
 - *Essential Question #2:* How do I use the inverse of a matrix, if it exists to be found, to solve systems of linear equations?
 - **Unit II Title: Quadratic Equations and Inequalities with Complex Numbers**
 - **Big Idea #1:** I can write and simplify complex expressions using arithmetic operations.
 - *Essential Question #1:* How do I identify and interpret a complex number?
 - *Essential Question #2:* How do I add and subtract complex numbers?

- *Essential Question #3: How do I multiply and divide complex numbers?*
 - **Big Idea #2:** I can solve quadratic equations and inequalities
 - *Essential Question #1: How do I solve equations of quadratic form?*
 - *Essential Question #1: How do I solve inequalities of quadratic form?*
 - *Essential Question #2: How do I solve real world problems involving quadratic equations and inequalities?*
- **2nd Quarter**
 - **Unit III Title: Polynomial Expressions and Equations**
 - **Big Idea #1:** I can write and simplify polynomial expressions using arithmetic operations.
 - *Essential Question #1: How do I simplify expressions using properties of exponents?*
 - *Essential Question #2: How do I add and subtract polynomial expressions?*
 - *Essential Question #3: How do I find compositions of functions?*
 - *Essential Question #4: How do I multiply and divide (synthetic and long division) polynomials?*
 - **Big Idea #2:** I can solve polynomial equations.
 - *Essential Question #1: How do I factor polynomials?*
 - *Essential Question #2: How do solve polynomial equations?*
 - **Unit IV Title: Rational Expressions and Equations**
 - **Big Idea #1:** I can write and simplify rational expressions using arithmetic operations.
 - *Essential Question #1: How do I simplify rational expressions?*
 - *Essential Question #2: How do I multiply, divide, add, and subtract rational expressions?*
 - *Essential Question #3: How do I simplify complex fractions?*
 - **Big Idea #2:** I can solve rational equations.
 - *Essential Question #1: How do I solve rational equations?*
- **MID-TERM EXAM**
- **3rd Quarter**
 - **Unit V Title: Piecewise and Absolute Value**

- **Big Idea #1:** I can solve absolute value equations and inequalities.
 - *Essential Question #1: How do I solve absolute value equations?*
 - *Essential Question #2: How do I solve absolute value inequalities?*
 - **Big Idea #2:** I can graph and analyze piecewise functions.
 - *Essential Question #1: How do I identify and interpret a piecewise function?*
 - *Essential Question #2: How do I graph and analyze piecewise functions?*
 - *Essential Question #3: How do I graph and analyze absolute value functions?*
 - **Unit VI Title: Function Analysis**
 - **Big Idea #1:** I can analyze functions.
 - *Essential Question #1: How do I find the intercepts of a polynomial function algebraically as well as with a graphing calculator?*
 - *Essential Question #2: How do I find relative maximums and minimums using a graphing calculator?*
 - *Essential Question #3: How do I determine whether a function is increasing, decreasing, positive, or negative?*
 - *Essential Question #4: How do I find holes and asymptotes of a rational function?*
 - *Essential Question #5: How do I analyze the graph of a function using end behavior?*
 - **Big Idea #2:** I can identify and apply transformations of functions.
 - *Essential Question #1: How do I reflect functions?*
 - *Essential Question #2: How do I dilate functions?*
 - *Essential Question #3: How do I translate functions?*
 - *Essential Question #4: How do I graph a function that has multiple transformations?*
 - *Essential Question #5: How do I identify transformations of a function from a graph and an equation?*
- **4th Quarter**
 - **Unit VII Title: Inverses and Radical Expressions, Equations, and Inequalities**
 - **Big Idea #1:** I can find an inverse of a function and prove they are inverses.

- *Essential Question #1: How do I find the inverse of a function?*
- *Essential Question #2: How do prove relations are inverses?*
- **Big Idea #2:** I can write and simplify radical expressions using arithmetic operations.
 - *Essential Question #1: How do I simplify radical expressions?*
 - *Essential Question #2: How do I convert between radical and rational exponent notation?*
 - *Essential Question #3: How do I perform operations on radical expressions?*
- **Big Idea #3:** I can solve radical equations and inequalities.
 - *Essential Question #1: How do I solve radical equations?*
 - *Essential Question #1: How do I solve radical inequalities?*
- **Unit VIII Title: Exponential and Logarithmic Functions**
 - **Big Idea #1:** I can graph and solve exponential equations.
 - *Essential Question #1: How do I define and graph exponential functions?*
 - *Essential Question #2: How do I solve exponential equations?*
 - *Essential Question #3: How do I solve exponential growth and decay problems?*
 - **Big Idea #2:** I can graph and solve logarithmic equations.
 - *Essential Question #1: How do I prove and use properties of logarithms?*
 - *Essential Question #2: How do I solve logarithmic equations?*
 - *Essential Question #3: How do I apply logarithms to real world problems?*

If Time:

- **Unit IX Title: Trigonometry and Trigonometric Functions**
 - **Big Idea #1:** I can use radian measure to derive the unit circle.
 - *Essential Question #1: How do I define radian measure?*
 - *Essential Question #2: How do I convert between degrees and radians?*
 - *Essential Question #3: How do I use reference and coterminal angles to derive the unit circle?*

- *Essential Question #4: How do I construct the unit circle to extend trigonometric functions to all real numbers?*
- **Big Idea #2:** I can graph and analyze trigonometric functions.
 - *Essential Question #1: How do I graph periodic functions?*
 - *Essential Question #2: How do I identify key features of periodic functions?*
 - *Essential Question #3: How do I model trigonometric functions using amplitude, frequency and midline?*
- **Big Idea #3:** I can prove and apply trigonometric identities
 - *Essential Question #1: How do I prove the Pythagorean identity?*
 - *Essential Question #2: How do I apply the Pythagorean identity?*

Course Materials:

- Google Chromebook
- Composition Notebook
- Pencils
- Colored Pencils
- Glue Sticks
- Scissors
- Loose Leaf Paper
- TI-84+ Graphing Calculator is recommended but not required

Textbook:

- Glencoe Algebra 2 that is online through Connect Ed

Electronic Resources:

- Google Classroom
- Connect Ed <https://connected.mcgraw-hill.com/connected/login.do>
- Khan Academy <https://www.khanacademy.org/>
- ALEKS through Connect Ed

Course Expectations:

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Rules:

1. Be **RESPECTFUL** at all times.
2. Employ the **4P's** every day.
 - a. Be **PROMPT!**
 - b. Be **PREPARED!**
 - c. Be **POSITIVE!**
 - d. **PARTICIPATE!**

3. Work from BELL TO BELL.
4. 3 Before Me!
5. Be HONEST!
6. NEVER GIVE UP

Procedures:

Entering the class room:

1. Enter quietly and sit down in your assigned seat.
2. Look at the board to see what materials you will need out on your desk.
3. Start on your Bell Ringer (**BR**) up on the SMART Board.
4. You may quietly talk to the person next you UNTIL THE TARDY BELL RINGS!
5. Once finished with your **BR** wait quietly in your seat for us to go over it together.

Heading your papers:

- Top Right of the paper Put the assignment, your First and Last Name, and the Date assigned.
- Ex. If assigned Pg. 345 # 4-30 Even

Turning in Homework and Assignments:

1. Look to make sure you headed the paper correctly.
2. More than one page:
 - a. Students need to make sure their name is on all pages.
 - b. Students are to quietly get up and go to the teacher's desk.
 - c. They are to staple all the pages together in the correct order.
 - d. Then they are to hand the paper to the student sitting in the front row closest to the teacher's desk.

Taking Notes:

Students are to have their notebook, a pencil, and a Chromebook with them every day. Students are to responsible for keep their notebooks organized and up to date. Notebook quizzes over the notes taken will be given after every unit or at least every 9 weeks.

Pencil Sharpening:

- Students can quietly get up one at a time to sharpen their pencil at anytime, unless if testing, and sit back down without bugging or talking to anyone else. If testing the student needs to ask for permission first.
- If the teacher or anyone else is up talking:
 - o Student needs to walk to the back of the classroom and around by the computers up to the electric sharpener by on the white shelf, and take the same trip back. This way you are not distracting others by crossing in front of the board or the person talking.

Getting a Tissue:

- Students can quietly get up one at a time to grab a tissue at anytime, unless if testing, and sit back down without bugging or talking to anyone else. **If testing the student needs to ask for permission first.**
- The same procedure for pencil sharpening is in place for tissues. Please walk along the back of the classroom.
- There is a trash can beside my desk so students do not need to walk all the way across the room to throw their tissues away.
- **USE HAND SANITIZER AFTER BLOWING YOUR NOSE!** We don't want your germs, and I will call you out in class and make you go back and use it.

Cavalier Café:

Students are to order from the café the first 3 minutes of class. When the order is delivered, students are to walk quietly to the back of the classroom and around by the cabinets to the door and take the same trip back. This way you are not distracting others by crossing in front of the board or the person talking. Ordering from the café is a privilege that can be taken away at any time. Students must clean up after themselves.

Tests and Quizzes:

1. Students will have until the bell rings to quickly review.
2. Once the tardy bell rings, students will need to clear their desks of everything but their Chromebook (if applicable), paper, and a pencil. All other things need to be placed at the front of the room and this includes cell phones! **NO CELL PHONES** are permitted on your person while testing. If you do not have a bag to place it in you may put it in the technology box provided on by desk.
3. **There is to be no talking at all!** Unless the teacher has given permission to do so, for instance if you have raised your hand to ask a question. All other talking will be considered cheating and will result in the test being taken and the student given an F.
4. Once finished with the test they are to work on the given assignment.
5. **No electronic devices except for the calculator and Chromebook will be permitted during a test!** If seen it will be considered cheating and the test or quiz will be taken from the student and they will be given an F.
6. **Making up a test or quiz is the student's responsibility!** If they are absent on the day of a test or quiz the student is to come to Mrs. Nicely either at the very beginning or very end of class to setup a time to take it. **I will not chase down students to take tests!** If they forget to make it up they will receive an F for the Test or Quiz!

Electronic Devices:

1. Students will be required to put their cell phones in the provided container. All other electronic devices, iPods, mp3 players, and etc., are to be placed in their bag.
2. Students will only be allowed to use them when instructed for class use.
3. Students will not be permitted to listen to music during instructional time. All ear buds should be out of ears!

Late/ Missing/Makeup Work:

Students are to place all late, missing, or makeup work in their period folder in the pink crate sitting by my desk at the beginning of the class period (before we go over BR together). This box will be cleaned out and graded **every Friday**. So if the student turns in the assignment on Monday it will not show up on Progress Book until the following Monday.

Students are responsible for finding out what work they missed. I will tell them, but only if asked! They will also be able to find missing work on the Google Classroom and on Progress Book.

Graded Assignments:

With the exception of test and quizzes all graded assignments will be placed in the student's period Crate, crates are under the cabinets. Students will be given the opportunity to go over and get their graded assignments during any free time they have in class. This box will be cleared out and papers will be trash after every interim report and nine weeks, approximately every 4.5 weeks.

All tests and quizzes will be passed back out by Mrs. Nicely, once all students have finished or made up the test or quiz. Tests and quizzes will not be passed back until that time.

Grading:

Unit Exams	50%
Assessments (Including: Quizzes, Essays, Labs, and Projects)	30%
Class work/Homework	20%
<ul style="list-style-type: none"> • 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.

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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:
