# Algebra II *Curriculum, Instruction & Assessment (CIA)*

⬜ UHS ⬜ HHH **Department:** Math **Teacher:**

## Distance Learning Course Summary

| Course Description | Textbooks And Other Curriculum Resources |
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| Academic Handbook at UHS (for Course Descriptions): | Online Textbook and Access |

| Grading Guidelines | Assignment Submission Guidelines | Required Materials for Class |
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| To be determined dependent on District guidelines.<br><br>Traditional Grade Scale will be used<br>A = 100% - 90%<br>B = 89% - 80%<br>C = 79% - 70%<br>D = 69% - 60%<br>F = Below 60%<br><br>The following assignments will be given a percentage grade: performance tasks, writing, or other summative assignments | To be determined dependent on District guidelines. | Depending on District guidelines and budgetary constraints. |

| Modes of Communication | Technology Programs For Course | Types of Assessments |
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| • Email<br>• Phone<br>• Online Office Hours<br>• Remind<br>• Aeries Communication<br>• Google Classroom | Depending on Budgetary Constraints (Potential Tech. Platforms ):<br>• Chromebook<br>• Google Classroom<br>• EdPuzzle<br>• Desmos<br>• Blocksi | Depending on Budgetary Constraints (Potential Tech. Platforms):<br>• Incremental assessments by standards/skills<br>• Projects when possible to assess in more than one way.(flashcards, video, student lessons, power points, slides) |

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| | • Quizizz<br>• Google Meet<br>• Clever (Textbook link)<br>• Illuminate<br>• IXL (if available) | |
| **Differentiation - Content**<br>(Engaging with the curriculum) | **Differentiation - Process**<br>(Teaching Practices) | **Differentiation - Product**<br>(Student Work) |
| To be determined dependent on District guidelines:<br>• Introductory "big idea" to evoke student curiosity as applicable.<br>• Discovery activities as applicable to promote student engagement<br><br>Potential examples: procedural/computational fluency moments, Desmos, media, Quizziz | To be determined dependent on District guidelines:<br>• choice boards<br>• digital manipulatives | To be determined dependent on District guidelines:<br>• See teacher syllabus |

## Distance Learning Mapping

**Yellow:** Priority **No highlight:** Alg 2 **Light blue:** mildly non-essential; **Grey:** non essential

| | First Semester | Standards | Key Concepts And Vocabulary | Second Semester | Standards | Key Concepts And Vocabulary |
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| **Content**<br><br>CCSS Math Resources<br><br>Standards for Mathematical Practices<br><br>Smarter Balanced Blueprint<br><br>Literacy and Anchor Standards | Trigonometry<br>8 days (1 Session)<br>• Define Trig Ratios<br>• Pythagorean Theorem - Right Triangles<br>• Special Right Triangles<br>• Solving Right Triangles<br>~~13 days~~<br>• Angles of rotation<br>• Evaluating trigonometric functions<br>• Unit circle<br>• Graphing sine, cosine, tangent, and cotangent, secant, cosecant | A-REI.11<br>F-IF.7, 7e, 9<br>F-BF.1, 3<br>F-TF.1, 2, 2.1, 5, 8 | Lab available to talk about tangent if there is an in-person opportunity. | Polynomials<br>25 - 30 days - ~~14 days~~ (3 Sessions)<br>• Power parent functions ($x^3$, $x^4$, etc)<br>• Sketching power functions by transformations to the parent functions<br>• Domain, range, zeros and end behavior of power functions<br>• Maximizing volume task<br>• Adding, subtracting and multiplying polynomials<br>• Factoring with sum or difference of cubes and review GCF | A-APR.1-3, 6, 7<br>A-REI.11<br>A-SSE.2<br>F-IF.7, 7c, 9<br>F-BF.1, 3<br><br>A-REI.2, 11<br>A-APR.7<br>F-IF.7, 7d, 9<br>F-BF.1, 3 | Showing that the range of odd functions is all real numbers, but the range is restricted with even functions.<br><br>Showing that the number of possible zeros is based on the degree of the polynomial. |

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| UHS Curriculum Maps<br><br>CIA Math Guide<br><br>Best Practices for K-12 Online and Blended Learning<br><br>Content Resources | • Pythagorean identities<br>• Trigonometric modeling | | | • Dividing polynomials (long division, synthetic division) and graph based on zeros, end behavior<br>• Rational Zero Theorem (p/q)<br>• Graphing and solving polynomial functions with real and complex solutions | | Add/subt polynomials translates the points and therefore the max number of zeros does not change. This means that the degree does not change.<br><br>Mult. polynomials changes the degree and can add to the possible number of zeros.<br><br>Dividing with respect to factoring the polynomial and leading us to sketching the graph. |
| | Linear Functions / Introduction to Functions<br>10 days - ~~7 days~~ (2 Sessions)<br>• Review of solving multi-step equations and inequalities, graphing lines given in Standard, Slope-Intercept, and Point-slope forms<br>• Domain, range, zeros and end behavior<br>• Solving systems of linear equations, algebraically and graphically<br>• Linear Tasks<br>• Arithmetic Sequences | A.SSE.4<br>F-BF.2<br>A-CED.1<br><br>A-REI.3.1<br>A-REI.11<br>F-IF.4-6 | Talk about zeros and how it relates to the degree of the function.<br><br>Discuss as a piecewise function so that the students can | Exponential and Logarithmic Functions<br>26 days ~~17 Days~~ (4 Sessions)<br>• Graphing and solving exponential functions<br>• Domain, range, zeros and end behavior<br>• Embed Geometric Sequences<br>• Transformations of exponential functions<br>• Exponential growth and decay<br>• Fitting data and choosing among models<br>• Compound Interest<br>• Graphing and evaluating logarithms | A-REI.11<br>F-IF.7, 7e, 9<br>F-BF.1, 3, 5<br>F-LE.2, 4, 4.1, 4.2, 4.3<br>A.SSE.4<br>F-BF.2 | Introduce graphing logs as inverses of exponential equations (reflection across the line y=x) .<br><br>Evaluating logs and exponentials implies seeing a log/exp as a number and being able to estimate its amount graphically. |

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| | Introduction to Functions; Absolute Value Functions and Equations<br>15 days - ~~10 days~~ (2 Sessions)<br>• Domain, range, zeros and end behavior<br>• Function notation<br>• Transformations of absolute value functions<br>• Solving absolute value equations, graphically and algebraically<br>• Solving absolute value inequalities, graphically and algebraically | F-IF.7, 7b, 9<br>F-BF.1, 3 | understand why you could have two zeros even though the degree looks to be one. | • Domain, range, zeros and end behavior<br>• Solving exponential and logarithmic equations<br>• Properties of logarithms | | |
| | Quadratic Functions and Equations (part 1)<br>6 days - ~~5 days~~ (1 Session)<br>• Transformations with parent graphs<br>• Domain, range, zeros and end behavior<br>• Graphing quadratic functions from factored<br><br>Quadratic Functions and Equations (part 2)<br>20 days - ~~10 days~~ (4 Sessions)<br>• Review factoring, excluding sum/difference of cubes (*)<br>• Solve by factoring<br>• Solve by square rooting(*)<br>• Solve by completing the square (*)<br>• Solve by the quadratic formula<br>• Operations with complex numbers<br>• Solving quadratic equations with imaginary roots | N-CN.1-2, 7-9<br>A-REI.11<br>A-SSE.2<br>F-IF.7, 9<br>F-BF.1, 3<br><br>N-CN.1-2, 7-9<br>A-REI.11<br>A-SSE.2<br>F-IF.7, 9<br>F-BF.1, 3 | Remember to make connections back to the graph when showing each type of solving method.<br><br>Ex: Solving quadratics, why do we have 0, 1, or 2 solutions both graphically and algebraically. Referring back to the degree of the polynomial. | Rational and Radical Functions<br>39 days ~~26 Days~~ (4 Sessions)<br>• Graphing rational functions using transformations to the parent graph<br>• Graphing rational functions by using long division to then use transformations to the parent graph<br>• Graphing all families of graphs by simplifying the expression, and identifying asymptotes and point discontinuities<br>• Multiplying and dividing rational functions and graph; excluded values<br>• Add and subtract rational functions and graph; excluded values | A-REI.2, 11<br>A-APR.7<br>F-IF.7, 7d, 9<br>F-BF.1, 3<br><br>A-REI.2<br>A-REI.11<br>F-IF.7, 7b, 9<br>F-BF.1, 3, 4, 4A<br>N-RN.1, 2 | The parent graph is the reciprocal function (y = 1/x).<br><br>Using long division will only use have a degree in the numerator less than or equal to the degree in the denominator. |

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| | • Solving systems of linear and quadratic equations, graphically and algebraically | | | • Solving rational equations; excluded values<br>• Write and graph inverses of linear functions<br>• Square root functions and graphing transformations to parent function<br>• Cube root functions and graphing transformations to parent function<br>• Write and graph inverses of quadratic, cubic, square root, and cube root functions<br>• Solving for a specific variable<br>• Simplifying nth root and rational exponent expressions | | |
| | • | | | Conic Sections<br>5 days ~~16 Days~~ (0 Sessions)<br>• Graphing parabolas in transformational form (AOS, vertex, directrix, focus)<br>• Graphing circles, ellipses, and hyperbolas (center, focus, minor/major axes)<br>• Completing the square to write quadratic equations in transformational form and graph<br>• Conics project<br>• Solving systems of linear and quadratic equations, graphically and algebraically (Embedded earlier in the course)<br>• Maximizing revenue task | A-REI.6, 7, 11<br>F-IF.7, 9<br>F-BF.1, 3<br>G-GPE.3.1 | Refer back to inverses and square root functions. |

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| **Skills/ Key Vocabulary** | Skills<br>•<br>Vocabulary | | | Skills<br>Vocabulary | | |
| **Assessments** | • | | | • | | |
| **Performance Tasks** | | | | | | |