

**Summer at Case  
2008 Equinox Program**

**Algebra II & Trigonometry Honors  
(INDIVIDUALLY PACED)**

**Course Description**

IP Algebra II Honors is an individually paced, honors-level high school mathematics course that covers the curriculum of a second-year high school algebra course. During the course, students work independently and at their own pace. Students receive support and individual attention from the teacher and teaching assistant. Mastery must be demonstrated to move to subsequent chapters. Individually paced math courses are not intended to remediate deficiencies.

*Prerequisites: Algebra I*

Credit: 2 semester of high school credit

**Outcomes**

Course Objectives:

*Advanced Algebra Honors* is a complete second year course at the honors level. It meets the latest National Council of Teachers of Mathematics (NCTM) standards. Successful completion of this Advanced Algebra Honors course prepares students for a full year of precalculus mathematics leading to Advanced Placement Calculus. An individualized evaluation at the end of the three weeks will be provided for each student detailing topics he or she has mastered.

Course Evaluation:

Proficiency and thorough understanding of material are major concerns of this course. Students work through honors level material and are expected to score at least 70 percent on chapter tests before they move on to a new topic. Students diagnosed as having incomplete proficiency in specific areas continue working on those areas with individualized instruction until they demonstrate proficiency. A teacher-written final evaluation is individually designed for each student.

**Resources and Materials**

Text: *Algebra 2*, Larson, Boswell, Kanold, and Stiff (McDougal Littell), 2007

**Student Evaluation and Grading Policies for Credit Courses Only**

CTD Grading Scale (A+ is at instructor's discretion; an instructor can use 97-100 A)

A+	100-97%	A	96-93%	A-	92-90%
B+	89-87%	B	86-83%	B-	82-80%
C+	79-77%	C	76-73%	C-	72-70%
D+	69-67%	D	66-63%	D-	62-60%
F	below 60%				

## Schedule

The course is *self-paced*, so the schedule is based on the students' demonstrated proficiency. The course follows these chapters in the above text:

Topics	Activities, Assignments and Assessments
<b>Chapter 1: Equations and Inequalities</b>	Apply properties of real numbers, evaluate and simplify algebraic expressions, solve linear equations, rewrite formulas and equations, use problem solving strategies and models, solve linear inequalities, solve absolute value equations and inequalities.
<b>Chapter 2: linear Equations and Functions</b>	Represent relations and functions, find slope and rate of change, graph equations of lines, write equations of lines, model direct variation, draw scatter plots and best-fitting lines, use absolute value functions and transformations, graph linear inequalities in two variables.
<b>Chapter 3: Linear Systems and Matrices</b>	Solve Linear systems by graphing, solve linear systems algebraically, graph systems of linear inequalities, solve systems of linear equations in three variables, perform basic matrix operations, multiply matrices, evaluate determinants and apply Cramer's Rule, use inverse matrices to solve linear systems.
<b>Chapter 4: Quadratic Functions and Factoring</b>	Graph quadratic functions in standard form, graph quadratic functions in vertex or intercept form, solve $x^2 + bx + c = 0$ by factoring, solve $ax^2 + bx + c = 0$ by factoring, solve quadratic equations by finding square roots, perform operations with complex numbers, complete the square, use the quadratic formula and the discriminant, graph and solve quadratic inequalities, write quadratic functions and models.
<b>Chapter 5: Polynomials and Polynomial Functions</b>	Use properties of exponents, evaluate and graph polynomial functions, add, subtract, and multiply polynomials, factor and solve polynomial equations, apply the remainder and factor theorems, find rational zeros, apply the fundamental theorem of algebra, analyze graphs of polynomial functions, write polynomial functions and models.
<b>Chapter 6: Rational Exponents and Radical Functions</b>	Evaluate nth roots and use rational exponents, apply properties of rational exponents, perform function operations and composition, use inverse functions, graph square root and cube root functions, solve radical equations.
<b>Chapter 7: Exponential and Logarithmic Functions</b>	Graph exponential growth functions, graph exponential decay functions, use functions

	involving $e$ , evaluate logarithms and graph logarithmic functions, apply properties of logarithms, solve exponential and logarithmic equations, write and apply exponential and logarithmic functions.
<b>Chapter 8: Rational Functions</b>	Model inverse and joint variation, graph simple rational functions, graph general rational functions, multiply and divide rational expressions, add and subtract rational expressions, solve rational equations.
<b>Chapter 9: Quadratic Relations and Conic Sections</b>	Apply the distance and midpoint formulas, graph and write equations of parabolas, graph and write equations of circles, graph and write equations of ellipses, graph and write equations of hyperbolas, translate and classify conic sections, solve quadratic systems.
<b>Chapter 10: Counting Methods and Probability</b>	Apply the counting principle and permutations, use combinations and the binomial theorem, define and use probability, find probabilities of disjoint and overlapping events, find probabilities of independent and dependent events.
<b>Chapter 11: Data Analysis and Statistics</b>	Find measures of central tendency and dispersion, apply transformations to data, use normal distributions, select and draw conclusions from samples, choose the best model for two-variable data.
<b>Chapter 12: Sequences and Series</b>	Define and use sequences and series, analyze arithmetic sequences and series, analyze geometric sequences and series, find sums of infinite geometric series, use recursive rules with sequences and series.
<b>Chapter 13: Trigonometric Ratios and Functions</b>	Use trigonometry with right triangles, define general angles and use radian measure, evaluate trigonometric functions of any angle, evaluate inverse trigonometric functions, apply the law of sines, apply the law of cosines.
<b>Chapter 14: Trigonometric Graphs, Identities, and Equations</b>	Graph sine, cosine, and tangent functions, translate and reflect trigonometric graphs, verify trigonometric identities, solve trigonometric equations, write trigonometric models, apply sum and difference formulas, apply double-angle and half-angle formulas.