Algebra II – Crosswalk (Summary of Revisions): 2016 *Mathematics Standards of Learning and Curriculum Framework*

Additions (2016 SOL)	Deletions from Algebra II (2009 SOL)
- AII.7a – Analyze the continuity of functions - AII.7c – Determine the extrema of a function - AII.7f – Determine values of a function for elements in its domain - AII.7g – Make connections between and among multiple representations of a function	- AII.3 – Identification of field properties valid for the complex numbers [SOL and EKS] removed but application of the properties is still expected - AII.3 EKS – Hierarchy of subsets of complex numbers - AII.7 EKS – Convert between logarithmic and exponential forms of an equation - AII.9 EKS – Determine a logarithmic curve of best fit

Parameter Changes/Clarifications (2016 SOL)	Moves within Algebra II (2009 SOL to 2016 SOL)
- AII.1a EKS – Simplify rational algebraic expressions limited to linear and quadratic - AII.1b EKS – Simplification of radicals may include rationalizing denominators - AII.1c EKS – Clarified that factoring polynomials should include those in one or two variables with no more than four terms over the set of integers with factors that are constant, linear, or quadratic - AII.3c EKS – Limited solving rational equations to linear and quadratic with real solutions containing factorable algebraic expressions algebraically and graphically - AII.3 and AII.7 US – Clarified that solutions and intervals may be expressed in different formats, including set notation, using equations and inequalities, or interval notation. - AII.6b EKS – Transform exponential and logarithmic functions (given a graph) limited to single transformations - AII.7a,d,e EKS – Clarified that examples for identifying domain, range, zeros, and intercepts should include graphs with discontinuities - AII.7b EKS – Identify intervals on which the function is increasing or decreasing limited to linear, quadratic, absolute value, square root, cube root, polynomial, exponential, and logarithmic functions - AII.7i EKS – Determine equations of vertical and horizontal asymptotes limited to rational, exponential, and logarithmic functions - AII.7j EKS– Determine inverse of a function limited to linear, quadratic, cubic, square root, and cube root functions - AII.7k EKS – Clarified that determining composition of functions includes both algebraic and graphical approaches - AII.8 EKS – Given zeros, write the equation of a polynomial limited to polynomial functions in factored form - AII.9 EKS – Determine a curve of best fit limited to quadratic and exponential functions - AII.11 EKS – Interpret variation, standard deviation, and z-scores were moved from Algebra I and are now only included in AFDA.7 and AII.11; mean absolute deviation is no longer addressed	- AII.1c – Write radical expressions as expressions containing rational exponents and vice versa [Moved to AII.1b EKS] - AII.1d – Factor polynomials [Moved to AII.1c] - AII.2 – [Moved to "Functions" strand as AII.5] - AII.3 – [Moved to AII.2] - AII.4 EKS - Recognize that the quadratic formula can be derived by applying completion of squares to any quadratic equation in standard form [Moved to AII.3 US] - AII.4 – [Moved to AII.3]; Use of graphing calculator [Moved to AII.3 EKS] - AII.5 – [Moved to AII.4]; Use of graphing calculator [Moved to AII.4 EKS] - AII.6 – Use of graphing calculator [Moved to AII.6 EKS] - AII.7 – Use of graphing calculator [Moved to AII.7 EKS] - AII.7b – Zeros [Moved to AII.7d] - AII.7c – Intercepts [Moved to AII.7e] - AII.7d – Intervals on which a function is increasing or decreasing [Moved to AII.7b] - AII.7e – Asymptotes [Moved to AII.7i] - AII.7f – End behavior [Moved to AII.7h] - AII.7g – Inverse of a function [Moved to AII.7j] - AII.7h – Composition of functions [Moved to AII.7k]

EKS = Essential Knowledge and Skills, referring to the column on the right side of the Curriculum Framework
EU = Essential Understandings, referring to the column on the left side of the Curriculum Framework

Comparison of Mathematics Standards of Learning – 2009 to 2016

2009 SOL	2016 SOL
Expressions and Operations	

AII.1 The student, given rational, radical, or polynomial expressions, will
  a) add, subtract, multiply, divide, and simplify rational algebraic expressions;
  b) add, subtract, multiply, divide, and simplify radical expressions containing rational numbers and variables, and expressions containing rational exponents;
  c) write radical expressions as expressions containing rational exponents and vice versa; [Moved to EKS] and
  d) factor polynomials completely.
	AII.1 The student will
	  a) add, subtract, multiply, divide, and simplify rational algebraic expressions;
	  b) add, subtract, multiply, divide, and simplify radical expressions containing rational numbers and variables, and expressions containing rational exponents; and
	  c) factor polynomials completely in one or two variables.

AII.2 The student will investigate and apply the properties of arithmetic and geometric sequences and series to solve real-world problems, including writing the first n terms, finding the nth term, and evaluating summation formulas. Notation will include Σ and a_n. [Moved to "Functions" strand as AII.5]	
AII.3 The student will perform operations on complex numbers, express the results in simplest form using patterns of the powers of i, and identify field properties that are valid for the complex numbers.	AII.2 The student will perform operations on complex numbers and express the results in simplest form using patterns of the powers of i.
Equations and Inequalities	

AII.4 The student will solve, algebraically and graphically,
  a) absolute value equations and inequalities;
  b) quadratic equations over the set of complex numbers;
  c) equations containing rational algebraic expressions; and
  d) equations containing radical expressions.
  Graphing calculators will be used for solving and for confirming the algebraic solutions. [Moved to EKS]
	AII.3 The student will solve
	  a) absolute value linear equations and inequalities;
	  b) quadratic equations over the set of complex numbers;
	  c) equations containing rational algebraic expressions; and
	  d) equations containing radical expressions.

AII.5 The student will solve nonlinear systems of equations, including linear-quadratic and quadratic-quadratic, algebraically and graphically. Graphing calculators will be used as a tool to visualize graphs and predict the number of solutions. [Moved to EKS]	AII.4 The student will solve systems of linear-quadratic and quadratic-quadratic equations, algebraically and graphically.
Functions	
	AII.5 The student will investigate and apply the properties of arithmetic and geometric sequences and series to solve practical problems, including writing the first n terms, determining the nth term, and evaluating summation formulas. Notation will include Σ and a_n. [Moved from "Expressions and Operations" strand, AII.2]

2009 SOL	2016 SOL
AII.6 The student will recognize the general shape of function (absolute value, square root, cube root, rational, polynomial, exponential, and logarithmic) families and will convert between graphic and symbolic forms of functions. A transformational approach to graphing will be employed. Graphing calculators will be used as a tool to investigate the shapes and behaviors of these functions. [Moved to EKS]	AII.6 For absolute value, square root, cube root, rational, polynomial, exponential, and logarithmic functions, the student will a) recognize the general shape of function families; and b) use knowledge of transformations to convert between equations and the corresponding graph of functions.
AII.7 The student will investigate and analyze functions algebraically and graphically. Key concepts include a) domain and range, including limited and discontinuous domains and ranges; b) zeros; c) *x*- and *y*-intercepts; d) intervals in which a function is increasing or decreasing; e) asymptotes; f) end behavior; g) inverse of a function; and h) composition of multiple functions. Graphing calculators will be used as a tool to assist in investigation of functions. [Moved to EKS]	AII.7 The student will investigate and analyze linear, quadratic, absolute value, square root, cube root, rational, polynomial, exponential, and logarithmic function families algebraically and graphically. Key concepts include a) domain, range, and continuity; b) intervals in which a function is increasing or decreasing; c) extrema; d) zeros; e) intercepts; f) values of a function for elements in its domain; g) connections between and among multiple representations of functions using verbal descriptions, tables, equations, and graphs; h) end behavior; i) vertical and horizontal asymptotes; j) inverse of a function; and k) composition of functions algebraically and graphically.
AII.8 The student will investigate and describe the relationships among solutions of an equation, zeros of a function, *x*-intercepts of a graph, and factors of a polynomial expression.	AII.8 The student will investigate and describe the relationships among solutions of an equation, zeros of a function, *x*-intercepts of a graph, and factors of a polynomial expression.
Statistics	
AII.9 The student will collect and analyze data, determine the equation of the curve of best fit, make predictions, and solve real-world problems, using mathematical models. Mathematical models will include polynomial, exponential, and logarithmic functions.	AII.9 The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of quadratic and exponential functions.
AII.10 The student will identify, create, and solve real-world problems involving inverse variation, joint variation, and a combination of direct and inverse variations.	AII.10 The student will represent, create, and solve problems, including practical problems, involving inverse variation, joint variation, and a combination of direct and inverse variations.
AII.11 The student will identify properties of a normal distribution and apply those properties to determine probabilities associated with areas under the standard normal curve.	AII.11 The student will a) identify and describe properties of a normal distribution; b) interpret and compare z-scores for normally distributed data; and c) apply properties of normal distributions to determine probabilities associated with areas under the standard normal curve.

2009 SOL	2016 SOL
AII.12 The student will compute and distinguish between permutations and combinations and use technology for applications.	AII.12 The student will compute and distinguish between permutations and combinations.