CURRICULUM MAP
Algebra II

Week 1-2	Weeks 3-5	Weeks 6-8	Weeks 9-11	Weeks 12-13	Weeks 14-16	Week 17-18
Patterns, Functions and Algebra 10-3. Solve equations and formulas for a specified variable; e.g., express the base of a triangle in terms of the area and height. 10-5. Solve simple linear and nonlinear equations and inequalities having square roots as coefficients and solutions. 10-6. Solve Equations and Inequalities having rational expressions as coefficients and solutions. **Credit - 1.0** **Prerequisites – Algebra I & Geometry or Math I and II** **Double-Blocked** **One Semester**	**Patterns, Functions and Algebra** 10-1. Define function formally and with f(x) notation. 10-9. Recognize and eplain that the slopes of parallel lines are equal and the slopes of perpendicular lines are negative reciprocals. 10-10.Solve real-world problems that can be modeled using linear, quadratic, exponential or square root functions. **Data Analysis and Probability** 11-4. Create a scatterplot of bivariate data, identify trends, and find a function to model the data. 11-8. Analyze and interpret univariate and bivariate data to identify patterns, note trends, draw conclusions, and make predictions. **Patterns, Functions and Algebra** 11-4. Identify the maximum and minimum points of polynomial, rational and trigonometric functions graphically and with technology.	**Patterns, Functions and Algebra** 10-11. Solve real-world problems that can be modeled, using systems of linear equations and inequalities. 11-9. Solve 3 by 3 systems of linear equations by elimination and using technology, and interpret graphically what the solution means (a point, line, plane, or no solution). **Number, Number Sense and Operations** 11-6. Compute sums, differences and products of matrices using paper and pencil calculations for simple cases, and technology for more complicated cases. 11-4. Use matrices to represent given information in a problem situation. 11-1. Determine what properties hold for matrix addition and matrix multiplication; e.g., use examples to show addition is commutative and when multiplication is not commutative. **Patterns, Functions and Algebra** 11-7. Model and solve problems with matrices and vectors.	**Number, Number Sense and Operations** 11-3. Represent complex numbers on the complex plane. 11-7. Compute sums, differences, products and quotients of complex numbers. **Patterns, Functions and Algebra** 11-3. Describe and compare the characteristics of the following families of functions: quadratics with complex roots, polynomials of any degree, logarithms, and rational functions; e.g., general shape, number of roots, domain and range, asymptotic behavior. 11-8. Solve equations involving radical expressions and complex roots.	**Number, Number Sense and Operations** 11-8. Use fractional and negative exponents as optional ways of representing and finding solutions for problem situations; e.g., $27^{2/3} = (27^{1/3})^2 = 9$. 11- 2. Explain the meaning of the nth root. **Patterns, Functions and Algebra** 10-2. Describe and compare characteristics of the following families of functions: square root, cubic, absolute value and basic trigonometric functions; e.g., general shape, possible number of roots, domain and range.	**Patterns, Functions and Algebra** 11-11. Describe how a change in the value of a constant in an exponential, logarithmic or radical equation affects the graph of the equation. 11-10. Describe the characteristics of the graphs of conic sections. **Patterns, Functions and Algebra** 11- 1. Identify and describe problem situations involving an iterative process that can be represented as a recursive function; e.g., compound interest. 11-2. Translate a recursive function into a closed form expression or formula for the nth term to solve a problem situation involving an iterative process; e.g., find the value of an annuity after 7 years. **Data Analysis and Probability (Introduce for Trig/PreCalculus)** 11-1. Design a statistical experiment, survey or study for a problem; collect data for the problem; and interpret the data with appropriate graphical displays, descriptive statistics, concepts of\ variability, causation, correlation and standard deviation. 11-2. Describe the role of randomization in a well designed study, especially as compared to a convenience sample, and the generalization of results from each. 11-3. Describe how a linear transformation of univariate data affects range, mean, mode and median. 11-9. Evaluate validity of results of a study based on characteristics of the study design, including sampling method, summary statistics and data analysis techniques.	**Data Analysis and Probability** 11-6. Use technology to compute the standard deviation for a set of data, and interpret standard deviation in relation to the context or problem situation. 11-7. Describe the standard normal curve and its general properties, and answer questions dealing with data assumed to be normal. **Measurement** 11-3. Derive a formula for the surface area of a cone as a function of its slant height and the circumference of its base. 11-4.. Calculate distances, areas, surface areas and volumes of composite three dimensional objects to a specified number of significant digits. 11-5. Solve real-world problems involving area, surface area, volume and density to a specified degree of precision. **Data Analysis and Probability (Introduce for Trig/PreCalculus)** 11-5. Use technology to find the Least Squares Regression Line, the regression coefficient, and the correlation coefficient for bivariate data with a linear trend, and interpret each of these statistics in the context of the problem situation. 11/8/2005

Benchmarks

Mathematical Processes Standard
Students use mathematical processes and knowledge to solve problems. Students apply problem-solving and decision-making techniques, and communicate mathematical ideas. The benchmarks for mathematical processes articulate what students should demonstrate in problem solving, representation, communication, reasoning and connections at key points in their mathematics program. Specific grade-level indicators have not been included for the mathematical processes standard because content and processes should be interconnected at the indicator level. Therefore, mathematical processes have been embedded within the grade-level indicators for the five content standards.

By the end of the 11-12 program:

A. Construct algorithms for multi-step and non-routine problems.

B. Construct logical verifications or counter-examples to test conjectures and to justify or refute algorithms and solutions to problems.

C. Assess the adequacy and reliability of information available to solve a problem.

D. Select and use various types of reasoning and methods of proof.

E. Evaluate a mathematical argument and use reasoning and logic to judge its validity.

F. Present complete and convincing arguments and justifications, using inductive and deductive reasoning, adapted to be effective for various audiences.

G. Understand the difference between a statement that is verified by mathematical proof, such as a theorem, and one that is verified empirically using examples or data.

H. Use formal mathematical language and notation to represent ideas, to demonstrate relationships within and among representation systems, and to formulate generalizations.

I. Communicate mathematical ideas orally and in writing with a clear purpose and appropriate for a specific audience.

J. Apply mathematical modeling to workplace and consumer situations, including problem formulation, identification of a mathematical model, interpretation of solution within the model, and validation to original problem situation.