CURRICULUM MAP
TRIGONOMETRY/PRE-CALCULUS

Week 1-3	Weeks 4-6	Weeks 7-11	Week 12-15	Week 16-18
Measurement 1. Determine the number of significant digits in a measurement. **Number, Number Sense/Operations** 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. **Patterns, Functions and Algebra** 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. 6. Represent the inverse of a function symbolically and graphically as a reflection about y = x. **Credit 1.0** **Prerequisites – Algebra II** **Double-blocked** **One Semester**	**Data Analysis** 4. Create a scatterplot of bivariate data, identify trends, and find a function to model the data. **Patterns, Functions and Algebra** 4. Identify the maxium and minimum points of polynomial, rational and trigonometric functions graphically and with technology. 5. Identify families of functions with graphs that have rotation symmetry or reflection symmetry about the y-axis, x-axis or y = x. 8. Solve equations involving radical expressions and complex roots. **Number, Number Sense/Operations** 3. Represent complex numbers on the complex plane. 7. Compute sums, differences, products and quotients of complex numbers. **Data Analysis** 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.	**Patterns, Functions and Algebra** 1. Identify and describe problem situations involving an iterative process that can be represented as a recursive function; e.g., compound interest. 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. 11. Describe how a change in the value of a constant in an exponential, logarithmic or radical equation affects the graph of the equation. **Data Analysis** 11. Examine statements and decisions involving risk; e.g., insurance rates and medical decisions. 7. Describe the standard normal curve and its general properties, and answer questions dealing with data assumed to be normal. **Measurement** 2. Use radian and degree angle measures to solve problems and perform conversions as needed.	**Number, Number Sense and Operations** 2. Determine what properties hold for vector addition and multiplication, and for scalar multiplication. 5. Model, using the coordinate plane, vector addition and scalar multiplication. 9. Use vector addition and scalar multiplication to solve problems. **Geometry and Spatial Sense** 2. Represent translations using vectors. 3. Describe multiplication of a vector and a scalar graphically and algebraically, and apply to problem situations. 4. Use trigonometric relationships to determine lengths and angle measures; i.e., Law of Sines and Law of Cosines. **Patterns, Functions and Algebra** 7. Model and solve problems with matrices and Vectors.	**Geometry and Spatial Sense** 1. Use polar coordinates to specify locations on a plane. 5. Identify, sketch and classify the cross sections of three- dimensional objects. **Patterns, Functions and Algebra** 10. Describe the characteristics of the graphs of conic sections. **Data Analysis** 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. 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. 3. Describe how a linear transformation of univariate data affects range, mean, mode and median. 6. Use technology to compute the standard deviation for a set of data, ad interpret standard deviation in relation to the context or problem situation. 8. Analyze and interpret univariate and bivariate data to identify patterns, note trends, draw conclusions, and make predictions. 9. Evaluate validity of results in a study based on characteristics of the study design, including sampling method, summary statistics and data analysis techniques. 10. Understand and use the concept of random variable, and compute and interpret the expected value for a random variable in simple cases. **11/15/2005**

All Eleventh Grade Indicators

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.