**Sharyland Advanced Academic Academy**

## Instructor’s Information:

* Name of Instructor: **Ann Marie Priolo MS, M.Ed.**
* Location: **SA3 Campus – Room 216**
* Telephone #: **(956) 584-6467 ext. 4420**
* E-mail Address: **apriolo@sharylandisd.org**

## Course Information: PRE-CALCULUS Pre-AP:

**Course Description:**

              In Pre-Calculus, students continue to build on the k-8, Algebra I, Algebra II and Geometry foundations as they expand their understanding of mathematics. Students will use functions, as well as, symbolic reasoning to represent and connect ideas in geometry, probability, statistics, trigonometry and calculus to model physical situations. Finally, students will use a variety of representations (concrete, pictorial, numerical, symbolic, graphical, and verbal), tools and technology (including, but not limited to calculators with graphing capabilities, data collection devices and computers) to model functions and equations and solve Real-Life problems.

 **Course Objective:** Pre-Calculus students will acquire and demonstrate knowledge of concepts, definitions, properties and applications of topics listed below. The main goal of Pre-Calculus is to help students obtain critical thinking and decision-making skills that will allow them to connect concepts, develop computational skills and learn strategies needed to solve mathematical problems.

**Course Assessment: (Sharyland ISD Grading Policy)\***

**60% Chapter Tests**

**40% Other Assignments**

**Expectations:**

All tests/exams are done in-class. No “make-ups”. Be prepared by doing homework first. *Tutoring/peer tutoring is “always available”!*

No use of personal cell phones or electronics allowed during class time/tests/exams.

Calculators (TI-84) will be provided for in class use.

Use of a neat and organized binder and spiral notebook is expected.

**Curriculum:**

       *(Supplementary Material will be used for Chapters 1-5)*

Chapter 1  Graphs
                             1.1 The Distance and Midpoint Formula
                             1.2 Intercepts: Symmetry: Graphing Key Equation
                             1.3 Solving Equations Using a Graphing Utility
                             1.4 Lines
                             1.5 Circles

                     Chapter 2   Functions and Their Graphs
                              2.1 Functions
                              2.2 The Graph of a Function
                              2.3 Properties of Functions
                              2.4 Library of Functions: piecewise-defined Functions
                              2.5 Graphing Techniques: Transformations
                              2.6 Mathematical Models: Building Functions

Chapter 3   Linear and Quadratic Functions

          3.1 Linear Functions and Their Properties

          3.2 Linear Models: Building Linear Functions from Data

          3.3 Quadratic Functions and Their Properties

          3.4 Build Quadratic Models from Verbal Descriptions and from Data

          3.5 Inequalities Involving Quadratic Functions

Chapter 4   Polynomial and Rational Functions

          4.1 Polynomial Functions and models

          4.2 The Real Zeros of a Polynomial Function

          4.3 Complex Zeros: Fundamental Theorem of Algebra

          4.4 Properties of Rational Functions

          4.5 The Graph of a Rational Function

          4.6 Polynomial and Rational Inequalities

Chapter 5 Exponential and logarithmic Functions

          5.1 Composite Functions

          5.2 One-to-One Functions: Inverse Functions

          5.3 Exponential Functions

          5.4 Logarithmic Functions

          5.5 Properties of Logarithms

          5.6 Logarithmic and Exponential Equations

          5.7 Financial Models

          5.8 Exponential Growth and Decay Models

          5.9 Building Exponential, Logarithmic, and Logistic Models

**Mid Term Exams (Chapters 1-5) 20% of semester grade\***

Chapter 6 Trigonometry Functions

          6.1 Angles and Their Measure

          6.2 Trigonometric Functions: Unit Circle Approach

          6.3 Properties of the Trigonometric Functions

          6.4 Graphs of Sine and Cosine Functions

          6.5 Graphs of the Tangent, Cotangent, Cosecant, & Secant Functions

          6.6 Phase Shift: Sinusoidal Curve Fitting

Chapter 7   Analytic Trigonometry

          7.1 The inverse Sine, Cosine, and Tangent Functions

          7.2 The Inverse Trigonometric Functions (Continued)

          7.3 Trigonometric Equations

          7.4 Trigonometric Identities

Chapter 8 Applications of Trigonometric Functions

          8.1 Right Triangle Trigonometry: Applications

          8.2 The Law of Sines

          8.3 The Law of Cosines

          8.4 Area of Triangle

          8.5 Simple Harmonic Motion; Damped Motion: Combining Waves

Chapter 11 Systems of Equations and Inequalities

 11.5 Partial Fraction Decomposition

 **FINAL EXAM (Chapters 6,7,8, 11 and possibly more) 20% of semester grade\***

\*\*\*If time permits, then the following lessons will be cover\*\*\*

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Chapter 9 Polar Coordinates; Vectors

           9.1 Lines

           9.2 Polar Equations and Graphs

           9.3 The Complex Plane; De Moivre’s Theorem

Chapter 12 Sequences; Induction; the Binomial Theorem

          12.1 Sequences

          12.2 Arithmetic Sequences: Geometric Series

          12.3 Geometric Sequences; Geometric Series

Chapter 14 A Preview of Calculus: The Limit, Derivative, and Integrals

           14.1 Finding Limits Using Tables and Graphs

           14.2 Algebra Techniques for Finding Limits

           14.3 One-Sided Limits; Continuous Functions

           14.4 The Area Problem; The Derivative

           14.5 The Area Problem; The Integral

**Best wishes for a very successful school year!!!**