Precalculus Syllabus

Instructor	Dustin Berthold	School Extension	5216
Class	Pre-Calculus	E-mail	DBerthold@nbcusd.org
Year & semester	2013-2014		

Text:

Pre-Calculus. Demana, Franklin.: Waits, Bert K.: Foley, Gregory D.: Kennedy, Daniel. Pearson Hall 2004.

Course Description:

This course will take an in-depth look into the relationships of triangles, trigonometric functions, and the unit circle. The students will strengthen their analytical reasoning by verifying trigonometric identities, deriving inverse functions, factoring higher degreed polynomials and graphing rational functions. Other topics may include: limits, series and sequences, and conic sections. Students are required to bring a TI-83 or TI-84 graphing calculator to class on a daily basis. Graphing calculator skills will be taught and use extensively in this course. Throughout this course, students will develop learning strategies, critical thinking skill, and problem solving techniques to prepare for future math courses and college entrance exams.

Due to this fact, this class will be treated just as a college level course. The class will work together to bridge knowledge from previous concepts in order to master new mathematical concepts. Therefore, Mr. Berthold will act as a facilitator while students engage in a self-discovery with some guidance when needed. I expect all students to come to class prepared to work and participate. I highly encourage all students to share their thoughts with the class pertaining to new ideas. When opinions are shared, I expect all students to humbly respect others opinions; even if you do not agree with them.

State Goals:

- **Goal 6:** Students will demonstrate and apply a knowledge and sense of numbers, including numeration and operations, patterns, ratios and proportions.
- **Goal 7:** Students will estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.
- **Goal 8:** Students will use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.
- **Goal 9:** Students will use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

- **Goal 10:** Students will collect, organize and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

Grade Policies:

All Material and work is graded strictly on a point basis.

*Students have the opportunity to retake sections of a test that they struggled with if practice is completed first and daily assignments are completed!

Each semester (two quarters) will be composed of 40% from each quarter and 20% from the semester final.

Progress reports will be sent home once in the middle of each quarter. Formal grade reports will be sent home at the end of each quarter.

Semester 1 Chapters and Targets	
Chapter 1 Basic Functions	To be able to evaluate and analyze functions, including domain using intervals. To be able to perform operations with functions and find composite functions. To be able to write and graph equations of lines, including parallel and perpendicular lines To be able to graph, find a linear regression line, and make predictions using scatter plots. To be able to identify and graph piecewise functions.
Chapter 3 Functions and their transformations	To be able to recognize, analyze, and graph basic functions using transformations and symmetry. To be able to find, analyze and graph a function's inverse. To be able to locate and identify the maximums, minimums, and intervals of increasing and decreasing of a function and use these to solve problems. Using intercepts and asymptotes to graph rational functions
Chapter 11 Exponential functions and financing	To be able to analyze and graph exponential functions that model growth and decay. To be able to use exponential equations to solve problems involving financing and population growth and decay. To be able to simplify, evaluate, and solve logarithmic expressions and equations. Solve problems involving exponential and logistic equations, including the use of logarithms.
Chapter 5 Pt.1 Basic Trig	Demonstrating knowledge of the trigonometric ratios by solving problems with right triangles using the ratios and inverse functions.

Semester 1 main vocabulary			
Transformations	Inverse functions	Maximums/minimums	Composite functions
Intercepts	Relative maximums	Relative minimums	Critical points
mptotes	Point of inflection	Iterate	Co-function
gression line	Piecewise function	Increasing functions	Decreasing functions
Even/Odd functions	Reference Angle	Unit Circle	Coterminal

Semester 2 Chapters and Targets	
Chapter 5 Pt.2 Analytical Trig	Recognize and use the trigonometric functions to solve problems. Solve triangles for missing sides, angles, and areas by using the Law of Sines and the Ambiguous Case. Solve triangles for missing sides, angles, and areas using the Law of Cosines. Recognizing, distinguishing, and solving triangles using SOH CAH TOA, the Law of Sines and the Law of Cosines.
Chapter 6 Graphing Trig Functions	Determining angular displacement, velocity, and being able to convert between radians and degrees. Create and analyze sinusoidal and tangent functions and determine amplitudes, periods, and shifts. Sketch the graphs of trigonometric functions and translations of sine and cosine functions. Model real world data with sinusoidal functions.
Chapter 7 rigonometric Identities	Recognizing and finding trigonometric values. Identify and use reciprocal and Pythagorean identities to simplify trigonometric expressions Use and create trigonometric identities to verify other identities. Solve trigonometric equations using identities and unit circle values.
Chapter 12 &15 Sequences, Series, Limits	Identifying patterns to determine values and terms of arithmetic and geometry sequences. Finding sums of finite arithmetic series and finite and infinite geometric series. Finding and evaluating limits of functions both graphically and algebraically.

Semester 2 main vocabulary			
Law of Sines	Law of Cosines	Unit circle	Trigonometric identities
Pythagorean identity	Mid-line	Periodic	Phase shift
Radian	Sector	Amplitude	Frequency
Sigma Notation	Sinusoidal functions	Limits	Foci
Arithmetic Sequences/Series		Geometric Sequences/Series	

Resources/Supplies/Materials:

All students must bring their own materials to class. Students must bring the following:

- 3 Ring binder
- Textbook

- Notebook
- Pencil
- TI-83 or TI-84 graphing calculator

Evaluation:

Homework Quiz = 10 points per section

Exit Slips = 2-10 points

Quizzes = 20-40

Tests = 50-100 points

Projects = Vary