Welcome to Ms. Whitney's Pre Calculus Course!

Winning is short-term but Success is long-term.

Instructor: Ms. Kenya Whitney **Email Address:** kenya.whitney@nhrec.org **Phone:** (757)- 766-1100 Ext. 3302

Course Name: **College Pre Calculus (3162) -** 1 weighted high school math credit

Website(s): Canvas

Course Materials: *TI 84+* calculator, Class Textbook – Precalculus Mathematics for Calculus, 7th edition by Stewart, Redlin, & Watson, 3 ring binder, notebook paper, pencils

Prerequisite: Algebra 2

Course Description: This course is an intensive, rigorous approach to mathematics designed to prepare students for college calculus. First semester, students will focus on the algebraic and geometric properties of polynomial, rational, exponential, logarithmic, and trigonometric functions, and engage in discussions about how these models are represented in the real world. Second semester, students will learn the analytic properties of trigonometric functions and geometric conics, as well as learning the properties of polar coordinates, vectors, matrices, parametrics, and sequences and series. The course concludes with an introduction to calculus.

Grading Scale: Grading will be based on tests, quizzes, classwork, and homework each 9 weeks. There are no end of semester exams.

A = 90 - 100
B = 80 - 89
C = 70 - 79
D = 60 - 69
F = less than 60

60% - Tests
25% - Quizzes
15% - Classwork/Homework

Mathematics: College Pre Calculus Course

Assessments:

Quiz/Tests

Quizzes will be given periodically to reinforce concepts that have been learned. Tests will be given at the end of major units of material. Students will be notified in advance of upcoming quizzes and tests. Test corrections are permitted and occur when students make corrections to graded tests. Students are able to retry missed problems for half credit. For example, If a student scored a 50% on the initial test they could submit test corrections to earn up to a 75%. Students are granted one test correction per quarter. The use of calculators is prohibited on all quizzes and tests.

Classwork/Homework

Classwork will be assigned to further inquiry and problem solving and as extra practice. Homework will be assigned for extra practice at home to supplement the in-class lessons and problem solving process. Deadlines for all assignments will be posted on Canvas.

Late Work

Homework & Quizzes are not accepted late under any circumstances except the following: extreme circumstances with supporting documentation and use of one OOPS token per quarter.

Our Classroom Expectations

- Ask to leave to use the restroom

- Cell phones will not be taken out in class unless for academic purpose
- Disruptions will result in parent contact
- Come to class prepared
- Be in your seats when the bell rings
- Value our classroom
- Contribute to mathematical learning

Attendance Policies

- Excuses Absences – Doctor's appointments, surgeries, field trips, and vacations are considered excused absences. A note or email from your *parent, teacher, or school* is required. If you will be absent for an extended period of time, please make arrangements with me to get course material early.

- Unexcused Absences – If you are absent without prior knowledge (illness), this is considered an unexcused absence until a note from your parent has been provided. If you are absent for one or two days, please check Canvas for missed material. If you are absent for more than 2 days, we can discuss how to recover assignments during office hours.

- Test/Quiz Absences – If you are absent the day a test or quiz is given, you will be expected to take the test/quiz the first day you return, unless you can make other arrangements such as coming to school early or staying later.

SEMESTER 1
PRE CALCULUS I COURSE CONTENT:

- Relations and Functions
    - Distinguish between relations and functions.
    - Evaluate functions both numerically and algebraically.
    - Determine the domain and range of functions in general, including root and rational functions.
    - Perform arithmetic operations on functions, including the composition of functions and the difference quotient.
    - Identify and graph linear, absolute value, quadratic, cubic, and square root functions and their transformations.
    - Determine and verify inverses of one-to-one functions.
- Polynomial and Rational Functions
    - Determine the general and standard forms of quadratic functions.
    - Use formula and completing the square methods to determine the standard form of a quadratic function.
    - Identify intercepts, vertex, and orientation of the parabola and use these to graph quadratic functions.
    - Identify zeros (real-valued roots) and complex roots, and determine end behavior of higher order polynomials and graph the polynomial, and graph.
    - Determine if a function demonstrates even or odd symmetry.
    - Use the Fundamental Theorem of Algebra, Rational Root test, and Linear Factorization Theorem to factor polynomials and determine the zeros over the complex numbers.
    - Identify intercepts, end behavior, and asymptotes of rational functions, and graphs.
    - Solve polynomial and rational inequalities.
    - Interpret the algebraic and graphical meaning of equality of functions ($f(x) = g(x)$) and inequality of functions ($f(x) > g(x)$)
- Exponential and Logarithmic Functions
    - Identify and graph exponential and logarithmic functions and their transformations.
    - Use properties of logarithms to simplify and expand logarithmic expressions.
    - Convert between exponential and logarithmic forms and demonstrate an understanding of the relationship between the two forms.
    - Solve exponential and logarithmic equations using one-to-one and inverse properties.
    - Solve application problems involving exponential and logarithmic functions.
- Systems of Equations
    - Solve three variable linear systems of equations using the Gaussian elimination method.

Major Topics to be Included

- Relations and Functions
- Polynomial and Rational Functions
- Exponential and Logarithmic Functions
- Systems of Equations

SEMESTER 2
PRE CALCULUS I COURSE CONTENT:

- Applications of Integration
    - Compute Volumes by cross-section
    - Compute Volumes by disk-washer
    - Compute Volumes by shells
    - Compute Work (spring, rope)
    - Compute Work (pumping liquids)
    - Compute Arc length
    - Compute Areas of surfaces of revolution
    - Compute Application (center of mass)

Course Objectives

- Trigonometric Functions
    - Identify angles in standard form in both degree and radian format and convert from one to the other.
    - Find the arc length.
    - Find the value of trigonometric functions of common angles without a calculator using the unit circle and right triangle trigonometry.
    - Use reference angles to evaluate trig functions.
    - Find the value of trigonometric functions of angles using a calculator.
    - Use fundamental trigonometric identities to simplify trigonometric expressions.
    - Graph the six trigonometric functions using the amplitude, period, phase and vertical shifts.
    - Use trig functions to model applications in the life and natural sciences.
- Analytic Trigonometry
    - Use the fundamental, quotient, Pythagorean, co-function, and even/odd identities to verify trigonometric identities.
    - Use the sum and difference, double angle, half-angle formulas to evaluate the exact values of trigonometric expressions.
    - Determine exact values of expressions, including composite expressions, involving inverse trigonometric functions.
    - Solve trigonometric equations over restricted and non-restricted domains.
- Applications of Trigonometry
    - Solve right triangles and applications involving right triangles.
    - Use the Law of Sines and Cosines to solve oblique triangles and applications.
- Conics
    - Identify the conic sections of the form: Ax^2+By^2+Dx+Ey+F=0.
    - Write the equations of circles, parabolas, ellipses, and hyperbolas in standard form centered both at the origin and not at the origin.
    - Identify essential characteristics unique to each conic.
    - Graph equations in conic sections, centered both at the origin and not at the origin.
    - Solve applications involving conic sections.
- Sequences and Series (Optional unit at the discretion of the department, not required for transfer.)
    - Identify the terms of geometric sequences.
    - Find a particular term of geometric sequence.
    - Determine the formula for the an term of geometric sequences.
    - Find the sum of first n terms of finite geometric series.
    - Find the sum of infinite geometric series.
    - Introduce arithmetic concepts as time allows.

Major Topics to be Included

- Trigonometric Functions
- Analytic Trigonometry
- Applications of Trigonometry
- Conics

Dual Enrollment Classes in High Schools - Fall 2022

Fall Sessions	10/3/22 to 1/31/23
Last Date to Add or Drop Class	10/21/22
Last Date to Withdraw from Class	12/14/22
Grades due to College	2/10/23

Helpful SmartPhone Apps

Icon	App Name	Purpose
	PowerSchool	Allows you to view your grades for Governor's School classes. If it is needed, the district code is "JPPH"
	Gmail	Sync with your Governor's School email. You can use it to communicate with your Governor's School teachers, classmates, and mentors on the go.
	New Horizons Regional Edu Ctrs	Quick and easy access to faculty contacts, grades, events (such as snow days and delays), etc
	Canvas Red = Student Blue = Parent	Allows you to communicate with your Governor's School teachers and classmates on the go. Canvas is also where you can find the class notes, helpful videos, homework assignments, practice quizzes, and flashcards (outside Quizlet)
	Office Lens	Allows you to use your phone's camera to combine multiple images into one PDF for uploading assignments as a single file.
	Quizlet	Access to teacher made flashcards with various self-quiz options.

Course Collaboration Guidelines on Assignments in Calculus

Type of Assignment	Is Collaboration Permitted?	What Type of Collaboration is Permitted?
Labs	Varies upon project	Please see project descriptions about collaboration. Individual projects should be worked on independently, but collaboration is allowed on group projects.
Homework	Yes	Students are allowed to use any resource (books, parents, classmates, internet) necessary as a guideline only or to ask questions. Being told or rewriting step-by-step work is considered copying/cheating.
Quiz or Test	No	
Test Corrections	No	Students are to communicate with the teacher if he/she is struggling with test corrections. Students can communicate with the teacher via email or Canvas, or are welcome to come to school early or stay after school.

Pre Calculus Math Parent & Student Signature Page

Please return this sheet to Ms. Whitney no later than 09/01/22

Students: Please read these guidelines carefully, then sign below and have a parent sign. If you have any questions now or during the year about acceptable assistance, ask your teacher.

Communication between students, teachers, and parents is very important to a successful school year. Students have received a syllabus, which they are expected to review with parents. It was reviewed with Ms. Whitney in class and students had an opportunity to ask questions during class.

Parents, please sign below to indicate:

1. I have received and reviewed the complete class syllabus with my student. We understand that classroom rules, including the cell phone policy, will be enforced for both safety and academic success.
2. I have written my questions or concerns in the space provided below so Ms. Whitney can address them early. If that space is blank, it indicates I do not have any questions or concerns at this time, but I know how to reach Ms. Whitney in the future if needed.
3. I have read and discussed the syllabus and class expectations with my student for his/her/their Pre Calculus course. My student understands what they mean and the consequences for disciplinary action.

Please check your preferred contact method (email is preferred):

- E-mail address: _____
- Cell phone: _____
- Home phone: _____

Questions? Concerns? Anything I should know about your student to help him, her, or they have a great year in math?

_____

_____

_____

Student Name (please print)	Student Signature	Date
_____	_____	_____
Parent/Guardian Name (please print)	Parent/Guardian Signature	Date
_____	_____	_____
Parent/Guardian Name (please print)	Parent/Guardian Signature	Date
_____	_____	_____