Welcome to Ms. Whitney's 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 Calculus (3177) -** 1 weighted high school math credit

Website(s): Canvas

Course Materials: *TI 84+* calculator, Class Textbook – Single Variable Calculus Early Transcendentals, 7th edition by Stewart, 3 ring binder, notebook paper, pencils

Prerequisite: Math Analysis or Pre Calculus I & II

Course Description: This course covers 2 semesters of university-level calculus for scientists and engineers, emphasizing understanding and application. The first semester covers limits and continuity of functions, techniques and applications of differentiation, and introduces integration. The second semester covers applications and advanced techniques of integration, differential equations, sequences and series, and analytical geometry. Upon completion of this course, students will understand both the geometric and rate of change analyses of differential and integral calculus. Students will apply their understanding of calculus to modeling real-world situations mathematically and be able to solve those mathematical models. Successful completion of this course will prepare students to enroll in multivariable calculus / linear algebra.

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

Grading Procedure

Mathematics: College 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 and quiz 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

CALCULUS I COURSE CONTENT:

- Limits
  - Differentiate between the limit and the value of a function at a point
  - Find the limit of a function by numerical, graphical and analytical methods
  - Apply Limit Laws
  - Calculate one-sided limit of a function
  - Prove the existence of a limit using precise definition of the limit
  - Determine the continuity of a function Calculate
  - Vertical and Horizontal asymptotes using limits
- **Derivatives and Differentiation Rules**
  - Define Derivatives and Rates of Change
  - Compute derivatives of basic functions using the definition of the derivative
  - Differentiate polynomial, rational, radical, exponential and logarithmic functions
  - Find equation of a tangent line using derivative
  - Differentiate trigonometric functions
  - Apply product, quotient, chain rules
  - Apply implicit differentiation and find derivatives of inverse trigonometric functions
  - Apply concept of rates of change to natural and social sciences
  - Apply the concept of related rates
  - Define hyperbolic functions and their derivatives
  - Find linear approximation of a function at a given point
- **Applications of Differentiation**
  - Calculate local and absolute maximum and minimum values of a function
  - Apply Rolle's Theorem and Mean Value Theorem to study properties of a function
  - Find critical points, and intervals of increasing and decreasing values of a function
  - Find points of inflection and intervals of different concavities
  - Sketch a curve for a given function
  - Apply rules of differentiation to solve optimization problems
  - Find antiderivatives for basic functions using knowledge of derivatives
- **Integrals**
  - Relate areas to definite integrals using sigma notation, Riemann Sums, and limits.
  - Apply Fundamental Theorem of Calculus to find definite integrals and derivatives
  - Find indefinite integrals of polynomials and basic trigonometric and exponential function
  - Apply Net Change Theorem

- Perform integration using substitution
- Find areas between curves
- Find average value of a function

SEMESTER 2
CALCULUS II 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)
- Techniques of Integration
  - Integrate by parts
  - Calculate trigonometric integrals
  - Calculate integrals by trigonometric substitution
  - Define the indeterminate form and apply L'Hopital's Rule.
  - Calculate improper integrals
  - Integrate by partial fractions
  - Integrate using Tables and Software
  - Approximate integrals (Trapezoidal, Simpson) with error estimation
- Infinite Sequences and Series
  - Write definition of and understand Sequences
  - Write definition of and understand Series (intro)
  - Determine convergence by integral test
  - Determine convergence by comparison test
  - Determine convergence of alternating series
  - Determine absolute convergence (ratio, root tests)
  - Apply strategies for testing series
  - Work with power series
  - Represent functions as power series
  - Find Taylor, Maclaurin series & polynomials
  - Calculate Taylor and Maclaurin series
- Parametric Curves and Polar Coordinates
  - Represent curves by parametric equations
  - Perform calculus with parametric curves
  - Use and graph with polar system
  - Calculate areas and lengths in polar coordinates
  - Define the conic forms in polar form Any changes to this syllabus will be noted in class

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.

Dual Enrollment Statement

The decision to dual-enroll in a course requires careful consideration. You have options, as you can see from the DE module on Faculty Advising Canvas course. You may wish to contact your top choice colleges to ask what the impact of taking a dual-enrollment course might be for your goals, particularly if you do not perform to your expectations in the course. Please be aware that you are generating a permanent college transcript with all the courses for which you are dual-enrolled. You can also use the dual-enrollment student guide from Transfer Virginia to help you determine the potential impact.

If you choose to dual-enroll, you must monitor your course grade. If you find you are not earning grades you want to have on your permanent college transcript, you may consider dropping the dual-enrollment portion prior to the Add/Drop date for the term of the course, or to withdraw from the dual-enrollment portion prior to the Withdrawal date. If you choose to withdraw from dual enrollment for the class, you will still earn high school credit and can plan to be well-prepared for the class in college. Dropping will have no record on your transcript, while withdrawal will leave a note on your college transcript indicating you withdrew, but no grade will be recorded on your college transcript. You can request a decline or withdrawal form from me or from Mrs. Yee.

No matter what you choose to do, I will respect your wishes. I want to work with you to support your learning, but I cannot learn the information for you; you will have to invest effort in the course in order to succeed. This may require you to learn new learning strategies that you haven't used in the past. I will do my utmost to support your personal learning in the class and encourage you to pursue your goals.

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 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
_____	_____	_____