

Calculus

Dear Student & Parents,

Welcome to the 2023-2024 school year at the Governor's School for Science and Technology! My name is Mrs. Yee and I will be teaching Calculus this year. I am really excited to see what this year has in store for us. If you ever have any questions or concerns during the year please let me know. My goal is to help your child succeed in school and exceed their goals for this year.

Prerequisites: Math Analysis or PreCalculus

Contact Info:

- Email: deidre.yee@nhrec.org
- Voicemail: (757) 766 - 1100 x 3394
- Schedule:

AM - Monday / Tuesday / Thursday / Friday			
Time	7:10am - 7:55am	8:00am - 8:45am	8:50am - 10:25am
Class	P1 =	P2 =	P3/P4 = Science
AM - Wednesday			
Time	7:10am - 7:50am	7:55am - 8:35am	8:40am - 9:40am
Class	P1	P2	Science
			Advising
PM - Monday / Tuesday / Thursday / Friday			
Time	11:20am - 12:55pm	1:00pm - 1:45pm	1:50pm - 2:35pm
Class	P5/P6 = Science	P7 =	P8 =
PM - Wednesday			
Time	11:20am - 12:20pm	12:25pm - 1:05pm	1:10pm - 1:50pm
Class	Science	Advising	P7
			P8

Materials:

- Class Textbook - Calculus, 7th edition by Stewart
 - Digital pages will be available in Canvas
 - Physical textbook available by request
- 3 Subject Spiral Notebook (for notes and classwork)
- 2" 3-ring binder & Tabs (Notes, Assignments, Review Packets, Tests & Quizzes, Helpful Handouts)
- TI 84+ Graphing Calculator ***If you cannot afford one, please speak with me privately.*

TNCC Dual Enrollment

Students have the option to sign up for dual enrollment through Virginia Peninsula Community College (VPCC) for college credit using the online program DualEnroll.

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.

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.

Grades:

- Governor's School:
 - A = 90 - 100
 - B = 80 - 89
 - C = 70 - 79
 - D = 60 - 69
 - F = less than 60
- Calculus:
 - Tests: 45%
 - Quizzes: 30%
 - CW & HW: 10%
 - Labs & Review: 15%

[GSST Grading Policy](#)

Curriculum:

FIRST SEMESTER

1. Limits & Continuity
2. Differentiation Rules
3. Differentiation Techniques and Applications
4. Graphical Analysis with Derivatives
5. Integrals
6. Applications of Integration

SECOND SEMESTER

7. Techniques of Integration
8. Infinite Series
9. Power Series
10. Differential Equations
11. Calculus with Polar and Parametric
12. Further Applications of Integration

Student Learning Outcomes Calculus I (Semester 1)

Upon completing the course, the student will be able to:

Limits:

- Differentiate between the limit and the value of a function at a point
- Find the limit of a function by numerical, graphical and analytic 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. [Note: L'Hopital's Rule is in Calc II but may be used for instructional purposes here.]
- 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 rule
- Find areas between curves
- Find average value of a function

Student Learning Outcomes Calculus II (Semester 2)

Upon completing the course, the student will be able to:

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

Class Expectations

- Skills Review - After most quizzes and/or tests, you will be given a worksheet on PreCalculus skills that you are expected to already know. Look on Canvas for the Helpful Videos website for links to online for you to watch if you are unsure of how to complete the problems
- Homework assignments are listed in Canvas, will be assigned and collected each class, and will be graded based upon effort. Mostly odd problems will be assigned so that you can check your answers. If an even problem is assigned, the answer will be posted under the assignment on Canvas.
- Quiz/Test Review - In preparation for assessments, you will receive a quiz or test review packet. You will be expected to have this completed and turned in prior to taking the assessment. Solutions will be posted in Canvas so you can check your answers and compare solution techniques.
- Cheating Policy - If a student cheats on an assignment, they will receive a 0 on that assignment, and the incident will be reported

Quarterly Expectations:

- Keep your work - Errors in gradebook entry do occur, so please keep your work in case there are any errors that need to be fixed.
- Test Corrections - When you receive a graded test, please retry the problems you lost points on before you forget the material you learned. On one test per quarter, you will be allowed to receive 50% back of the points you lost (50 > 75, 60 > 80, etc).

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 Edmodo for missed material. If you are absent for more, we can discuss how to get you caught up on Edmodo or when you return.

- 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.

AP Practice / Exams

- Mrs. Yee will invite you to an AP Prep "class" in Canvas where all AP prep materials will be at the end of Quarter 3 (Spring Break).
- AB
 - All material will be covered by the time of the AB exam (Monday, May 13)
 - Quarters 3 & 4 - Each week, practice free response questions will be available for extra credit. Two versions will be available, so you will only need to complete the AB version
- BC
 - Vectors are not covered in the GSST Calculus class and the AP exam is administered in the middle of the Polar and Parametric unit. Supplemental materials will be available in the AP Prep "class" in Canvas for you to study these topics.
 - Quarters 3 & 4 - Each week, practice free response questions will be available for extra credit. Two versions will be available, so you will only need to complete the BC version.

Helpful SmartPhone Apps

Icon	App Name	Purpose
	Power School	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)
	Quizlet	Access to teacher made flashcards with various self-quiz options.

Course Collaboration Guidelines on Assignments in Calculus

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.

Type of Assignment	Is Collaboration Permitted?	What Type of Collaboration is Permitted?
Projects	Varies upon project	Please see project descriptions about collaboration. Individual project 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 they are struggling with test corrections. Students can communicate with the teacher via email or Canvas, one-on-one Zoom session, or are welcome to come to school early or stay after school.

MATH SYLLABUS

Parent & Student Signature Page

Please return this signed sheet to your instructor by 9/4/2023

Please read these guidelines carefully, then sign below and half 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 your instructor 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 your teacher 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 to reach your instructor in the future if needed.
3. I have read and discussed the syllabus and class expectations with my student for his/her/their math course. My students what they mean and the consequences for disciplinary action.

Please check your preferred contact method:

- Email 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 (printed)	Student Signature	Date

_____	_____	_____
Parent/Guardian name (printed)	Parent/Guardian Signature	Date

_____	_____	_____
Parent/Guardian name (printed)	Parent/Guardian Signature	Date