**Gateway STEM High School**

***Learners Today, Leaders Tomorrow!***



**Honors Pre-Calculus – Grade 11**

**Room 429 East**

**Course Syllabus**

**2017-2018**

**INSTRUCTOR: Ana Barrios PLANNING PERIOD: 4th**

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**COURSE FRAMEWORK:**

Welcome (back) to Gateway STEM High School! In this document you will find information outlining the course content and goals of Honors Pre-Calculus. It is important to get to know this information and fully understand the material. Through this course you will gain problem solving skills needed to navigate the world around you, become advocates for your own education, meet your goal on the ACT, and earn a score of 3 on the AP calculus test next school year. We will develop a family environment where everyone feels safe and free to make mistakes and learn from those mistakes.

Pre-calculus weaves together previous study of algebra, geometry, and functions into a preparatory course for calculus. It is expected you will take advanced placement calculus next school year. The course focuses on the mastery of critical skills and exposure to new skills necessary for success in subsequent math courses. Topics include linear, quadratic, exponential, logarithmic, radical, polynomial, and rational functions; systems of equations; and conic sections in the first semester. The second semester covers trigonometric ratios and functions; inverse trigonometric functions; applications of trigonometry, including vectors and laws of cosine and sine; polar functions and notation; and arithmetic of complex numbers. Pre-calculus ends with the first chapter of the AP curriculum: finding the limit of a function.

Through exploration, class discussion, hands-on activities, and traditional lecture, students in this course will gain a better understanding of the foundational concepts of calculus so that you may be more successful in future mathematics courses and in STEM careers. This course approaches the content in four ways – analytically, numerically, graphically, and verbally – and not through computational rules alone. Students also practice appropriate communication of the mathematics, be it written or verbal.

**LEARNING OUTCOMES:**

In AP calculus, students have the opportunity to earn college credit by taking the AP Calculus AB Exam, an internationally recognized standard for the completion of one college semester’s worth of calculus. Students will use their confidence and grit to pass the AP calculus test and earn college credit in the 2018 – 2019 school year. Therefore, students will participate in rigorous, college-level learning experiences and take standards-based assessments. This course is preparing you to be successful in AP calculus.

**COURSE OUTLINE:**

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| --- | --- | --- |
| Semester 1 | Unit Name | Standards |
| Unit 1 – Functions and their Properties | 1. Determine whether a given relation is a function using tables, the vertical line test, and by identifying domain and range 2. Graph polynomial, absolute value, logarithmic, exponential, rational, and radical functions and families of their equations. |
| Unit 2 – Continuity and Behavior of Functions | 1. Discuss the continuity and end behavior of a function. 2. Find the extrema of a function and determine whether a function is increasing or decreasing. |
| Unit 3 – Writing Equations for Functions | 1. Write linear equations, including parallel and perpendicular lines, quadratic, and equations of conics. 2. Determine the inverse of a function and graph the inverse function. |
| Unit 4 – Polynomial & Rational Functions | 1. Determine the roots, both positive and negative, of a polynomial equation through algebraic techniques and using the discriminant of quadratic equations. 2. Find factors of polynomials using various theorems. |
| Unit 5 – Solving Equations | 1. Solve radical and rational equations. 2. Evaluate and simplify expressions and solve equations containing rational exponents and logarithms. 3. Solve equations involving common logarithms and the natural logarithm. |

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| Semester 2 | Unit Name | Standards |
| Unit 6 – Trigonometric Functions | 1. Find the values of the six trigonometric functions using trigonometric ratios and the unit circle. 2. Evaluate inverse trigonometric functions using the families of triangles. 3. Solve triangles using trigonometric functions and Law of Sines. |
| Unit 7 – Graphs of Trigonometric Functions | 1. Graph sine, cosine, tangent, cotangent, secant, and cosecant functions. 2. Write equations of sine and cosine functions given the amplitude, period, phase shift, and vertical translation. |
| Unit 8 – Trigonometric Identities & Equations | 1. Solve trigonometric equations using the various identities. 2. Simplify inverse expressions and write inverse equations for the six trigonometric functions. 3. Use the basic trigonometric identities to verify other identities. |
| Unit 9 – Functions & their Limits | 1. Estimate limits using a numerical or graphical approach 2. Evaluate limits using multiple algebraic techniques 3. Understanding continuity in terms of limits on open and closed intervals 4. Determine infinite limits from a graph by labeling vertical asymptotes |

**Required materials:**

* Texts: Advanced Mathematical Concepts, Glencoe
* Graphing Calculator: It is recommended that you purchase your own Casio graphing calculator. Another option is to find graphing calculator apps on your phone or internet; these may be inconvenient for you to use though. Check out amazon.com to buy them used.
* Several #2 pencils
* Erasers
* Composition Book
* 3-Ring Binder or Large Spiral Notebook: Students are required to take notes and keep them organized; these materials are ***only for your pre-calculus class***.
* Graph paper

**Classroom EXPECTATIONS/POLICIES:**

Students are expected to use good judgment and conduct themselves in a manner representative of a mature young adult. It is expected you follow the 5 Expectations of Gateway STEM High School 100% of the time:

1. Be in your assigned seat/area, ready to work when the bell finishes ringing.
2. Have paper, pencils/pens, books, and all needed supplies every day.
3. Keep hands, feet, books and objects to yourself.
4. No profanity, rude gestures, teasing or put downs.
5. Follow directions of the Uniform Code of Student Rights and Responsibilities Related to Conduct and all school adults unless their request is illegal, immoral or unsafe.

Behavior that is disruptive to the learning environment or detrimental to the education or wellbeing of any person will result in consequences including but not limited to one-on-one conversations with Ms. Barrios, phone calls home or referrals. This course is meant to prepare you for college. As such, there needs to be no time wasted on distractions. The following are also expected to be followed at all times:

1. **Be Prompt:** Class starts at the ringing of the bell. Please be on time and ready to begin the do now at the ringing of the bell.
2. **Be Productive:** There is limited time available for us to achieve the goals that we have set as a class. It is important that you are on task at all times to ensure a sense of urgency towards achieving your goals.
3. **Be Prepared:** In order to be successful scholars must come to class everyday prepared with pencils, notebook, homework, and other required material.
4. **Be Respectful:** Valuing each and every person that is in the school will be valuable to the success of our class as a unit. Disrespect will not be tolerated in any sense and will result in direct and immediate consequences

**GRADING POLICY/SCALE:**

**Assignments Descriptions Value**

Formative Quizzes, Classwork, and Homework = 40%

Summative Projects, Unit Tests = 60%

**TOTAL = 100%**

**Semester Grade Policy:**

**Grading Policy:** Students will follow the grading scale issued by the district which is as follows:

**Grade** **Grading Scale**

A 100 – 90

B 89 – 80

C 79 – 70

D 69 – 60

F 59 and below

Parents may have internet access to their student’s grades and assignments, upon Administrative approval at <https://sis.slps.org/SLPS/Default.aspx>

**Unit Tests.** As with all courses at Gateway STEM High School, grading will be standards based. The standards have been organized and grouped into Learning Goals. Each unit of study has four to six learning goals that will be taught and assessed. **Students are expected to achieve 75% or above mastery on all learning standards covered this school year.** Each unit test will assess all 3 – 4 learning goals and each learning goal will be graded individually. So students will earn 3 – 4 different grades on each unit test. Each learning goal will be assessed using both multiple-choice questions (2 points each) and free response questions at 4 points each.

**Homework.**  5 – 6 homework assignments a unit, each worth 5 points each. **No late homework will be accepted**.

**Quizzes.** Quizzes will always have 4 free response questions at 4 points each about the topics covered 2 lessons prior to the quiz. Retakes are available for quizzes. Students have until the day of the unit test to retake a quiz. No exceptions. Daily quizzes will be given based off of homework the previous day. These quizzes cannot be retaken or made up. You will take them during the first 5 minutes of class.

**Reassessment Policy.** After the in-class test is given, a student can choose to reassess on any of the learning goals to improve their grade. Before a student is eligible to retake a test, he or she must first complete a remediation assignment for the learning goal to be retested. You will be given the opportunity to retake an assessment on a learning goal that you didn’t master 2 weeks after the assessment after school or during lunch. It is the student’s responsibility to let Ms. Barrios know when he/she wants to retake a standard by signing up on the class website https://sites.google.com/site/mathismysuperpower/precalc.

**ACADEMIC INTEGRITY/ PLAGIARISM:**

Academic dishonesty includes cheating, falsifying information, copying an assignment, submitting the same assignment for different classes without permission, and getting answers for tests from another student. Plagiarism occurs when students deliberately use another person's language, ideas, or answers and present them as their own without citing the source.

If you choose to copy a homework assignment from another assignment or if you intentionally give another student your homework to copy, all students involved will receive a “0” for that assignment and their guardians will be notified via phone. If this happens a second time, we will have a meeting with your vice principal regarding your academic dishonest.

**MISCELLANEOUS COURSE INFORMATION:**

* *Graphing Calculators:* As mentioned above, students are expected to use their own graphing calculators on their homework as well as bring them to class. You will be asked to make connections between the graphs of the functions and their analysis, and draw conclusions about the behavior of functions when using a graphing calculator. The following features on the Casio main menu (which will be called applications or “apps”) will be used to most often: TBLE (make a table of a function to find solutions), GRPH (graph functions to analyze their behavior), STAT (input a data set to find an equation of best fit) and SLVE (solve equations simultaneously). Other important applications include the “trace” function and the “solve” function when graphing and estimating derivatives and other topics. You also have the option of downloading a graphing calculator app to your smart phone or using one online.
* *Text Message Notifications:* Students and/or parents can receive text messages notifying them of cancelations of tutorials, changes in test dates, reminders for upcoming tests and assignments, etc. It is expected that you subscribe to these messages. Text the code @44b94e to 81010 to sign up. You can unsubscribe at any time by replying “stop” to a message. The most efficient way to reach me is via the Remind app.
* *Absences:* it is your responsibility to get any missing work from a classmate or during after school tutoring.
* *Extra Help / Tutoring:* I will stay after school for math tutoring twice a month on Thursdays. This will be noted on your unit calendar at the start of every unit. If you do not come to the classroom by 2:45 then I will assume you will not attend tutoring and I will go home. If you want help via email, send me an email before 7 pm to get a response back that evening.
* *Hall Passes:* you are given four (2) hall passes per a semester. Once those are gone, you will not be allowed any access to the hall pass. No student will be permitted to leave the room the first and last 15 minutes of class.
* *Late Work:* it is the responsibility of the student to get missing work from the teacher. For each school day that an assignment is late, a 10% deduction in the grade earned by the scholar will occur with a maximum of a 30% deduction. In addition, no projects or major assignments will be accepted after two (2) days late and will receive a 30% deduction automatically. Any assignment turned in after the listed time frame will result in a zero.
* *Electronic Device Policy.*  You will be able to use your own device multiple times during the school year to aid in your learning and to increase participation. Once every two weeks and at random (determined by the classes scores on assessments, for example), the class will be able to listen to music using their headphones while they work. There will be days that electronic devices will not be used. There will be multiple interventions if you choose to use your device as a distraction or for reasons that will not help you learn.
* *Use of Salder.* If you are struggling with your homework, you have the opportunity to responsibly use Slader, the online website that shows solutions and processes to solve your homework problems. However, if you use it solely to copy the solution then the results will show in failing grades on your test since you are not practicing on your own.

#### image001.jpgContract and Acknowledgement of Syllabus

(To be signed by the student, completed by the parent/guardian, and returned to the teacher)

By signing this sheet, we acknowledge that we have read through this syllabus together and know what is required. If there are any questions about what is required, I know that my teacher can be reached by visiting the school, through email, or phone. As a parent/guardian, my help and support is an invaluable tool and resource to the success of my student.

##### Student Name­ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

##### Student Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which of the following devices do you have everyday access to (circle type):

* **Computer or laptop** (PC or Mac?)
* **Tablet**
* **Smart phone** (Android or iPhone?)
* **Do you bring your device to school?** Yes / No
* **Do you have internet access on your phone?** Yes / No

**Parent/Guardian Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Parent / Guardian Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:**

**Relationship to Student (i.e. parent, grandmother…): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**E-mail Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Home: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Work: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cell: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**What strengths and weaknesses does your child have that I should know about?**

**What do you wish that teacher knew about your child that they might not know? Also, is there anything, method of teaching, or classroom environment that makes learning more easy and/or difficult for them?**