



ACE Technical Charter High School

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Course Syllabus AP AB Calculus

Teacher: Mr. Bortnick

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Office Hours: Wednesdays 2-2:30 or by appointment

Department: Mathematics

Credits Earned: 1 credit

Graduation Requirement: Yes

Course Website: www.bortnickmath.com

Course Description:

This course continues where Pre-Calculus left off. In this class students will learn about: What Calculus is and how it is used in the real world, Limits and their Properties, Differentiation, Applications of Differentiation, Integration, Logarithmic, Exponential, and other Transcendental functions, Differential Equations, and Applications of Integration. There will be a heavy emphasis on graphing from scratch and interpreting graphs. We will focus on using the “Rule of Four” when exploring problems: Geometric Representations, Numeric Representations, Analytic Representations, and Verbal Representations. Explaining mathematics in this way will help students prepare for the AP AB Calculus Exam in the Spring of 2015.

Students will be actively involved in their learning as they explore mathematics, collaborate with their peers, and present information to the class. We will use technology including TI-83's and TI-89's to help the students visualize results and to supplement activities. The study of Calculus promotes a greater understanding of the world and has many practical applications.

Chapter 1 Learning Goals:

The student will:

- Sketch the graph of an equation
- Find the intercepts of a graph
- Test a graph for symmetry with respect to an axis and the origin
- Find the points of intersection of two graphs
- Interpret mathematical models for real-life data
- Find the slope of a line passing through two points
- Write the equation of a line with a given point and slope
- Interpret slope as a ratio or as a rate in a real-life application
- Sketch the graph of a linear equation in slope-intercept form
- Write equations of lines that are parallel or perpendicular to a given line
- Use function notation to represent and evaluate a function
- Find the domain and range of a function
- Sketch the graph of a function
- Identify different types of transformations of functions

- Classify functions and recognize combinations of functions
- Fit a linear model to a real-life data set
- Fit a quadratic model to a real-life data set
- Fit a trigonometric model to a real-life data set

Unit Titles:

- P. Preparation for Calculus
- I. Limits and their Properties
- II. Differentiation
- III. Applications of Differentiation
- IV. Integration
- V. Logarithmic, Exponential, and other Transcendental Functions
- VI. Differential Equations
- VII. Applications of Integrals

Textbook(s):

Calculus of a Single Variable – AP Edition – Larson 9th Edition (2010)

Required Materials and Supplies – EVERY DAY!:

1. Pencils (not pens)
2. Loose-leaf paper
3. Math notebook (used only for this class)
4. Math folder (for keeping returned papers)
5. TI-83/TI-84 Graphing Calculator (Rent one from ACE if necessary)

Attendance Policy:

Every student is expected to be in school each day on time. If you are absent, your parent or guardian must call the school. When you return, you must bring in a note to the Main Office. Mrs. Ford-Criss will verify that your absence is excused and mark it in PowerSchool.

You must be in your seat when the bell rings or you will be considered Tardy.

Excessive Tardies and/or absences will be referred to the Dean of Students, and will be addressed according to School Policy.

It is the responsibility of the **STUDENT** to see Mr. Bortnick to make up classwork, homework, quizzes, or tests due to absences. All late homework will be half credit. If you do not have your homework at the beginning of class when I come around to check it, it is late (yes, even if you just forgot it in your locker). **No late work will be accepted after the unit test.** After that, students cannot make up that assignment without special permission and a contract from Mr. Bortnick.

Students absent the day of a test will take the test the following day. Students absent the class before a test **will still take the test** even if they missed review. *If you feel that circumstances make it impossible for you to do your best work on a test, please contact Mr. Bortnick ASAP – before the test is highly preferable.*

Grading Policy:

Grades will be broken down into the following percentages:

Category	Percentage
Homework	20%
Participation/Classwork	15%
Quizzes	20%
Tests	35%
Projects	10%
Total	100%

The grading scale for this class is as follows:

Grade	Percentage	Grade Points
A+	97-100	4.3
A	93-96	4.0
A-	90-92	3.7
B+	87-89	3.3
B	83-86	3.0
B-	80-82	2.7
C+	77-79	2.4
C	73-76	2.0
C-	70-72	1.7
D+	67-69	1.3
D	63-66	1.0
D-	60-62	0.7
F	59 or below	0

Grading Policies:

Quizzes/Tests:

There will be weekly quizzes to assess student understanding. The quizzes will frequently be a few problems similar to the previous lesson and homework assignment. This is to encourage students to get help on their homework if they do not understand a particular topic. Most days students will have opportunities to ask questions about the previous night's homework assignment before the quiz or test.

Homework:

EXPECT HOMEWORK ALMOST EVERY NIGHT! As a rule, I will not assign you any work that I do not honestly think you can do. Every assignment that I give you has a purpose: this includes homework. Frequently, most assignments should not take you more than 20-25 minutes. Depending upon how class lessons go, I may allow time to begin the homework in class. I strongly suggest that you use this time to your advantage. Your classmates are valuable resources. Most days I will be available during class, before, and after school in room 303 if you have any questions. Any students that are caught cheating on homework will receive a 0.

Participation and Classwork:

Classes most days will start with a Do-Now. Generally the sheets are given for the entire week. It is the student's responsibility to bring that sheet to every class. At the end of the week, students will turn their sheets in for credit. Full credit is given for the correct answer while showing work. If you do not show your work, you will only get half credit.

- Attendance will factor into your participation each day. Students that are late (even just a few seconds tardy) or absent will lose all of their attendance points for that day.

Notebook Checks:

The ability to take good notes will help you greatly in college and in most careers. We will work on keeping an organized notebook/folder for the class. About once a unit there will be notebook checks that will check for the following:

- Completeness – Student took notes on lecture material and did assigned classwork
- Organization – Student keeps copies of relevant handouts. Notes/Classwork have a title and are dated. Problem numbers are labeled. It is easy to find things!
- Neatness – Notes are readable and neat.

Extra Credit:

Just do it. I only give a few opportunities for extra credit. Every point you earn can only help your grade in the class. An added bonus: when Mr. Bortnick computes your final average, he's much more likely to round up if he sees that you have already done everything in your power to improve your grade.