

## AP CALCULUS AB SYLLABUS

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2017-2018

### Course Description

The objective of this class is to offer an instructional environment where every student has a full opportunity to learn, study, and make discoveries in the different areas of calculus. Focus for this semester will be on a review of functions and their graphs, an investigation of limits, and a rigorous study of derivatives and their applications. The students will be challenged to apply their knowledge to a number of real-life applications by working together on in-class group activities, and by individual efforts on homework assignments. The use of technology is a necessity, and computers and graphing calculators will be frequently incorporated into the lessons.

### First Semester Units:

I. Chapter P sections 1-3	Preparation for Calculus	(~ 3 days)
II. Chapter 1 sections 1-5, ch 3 section 5	Limits and Their Properties	(~ 13 days)
III. Chapter 2 sections 1-5	Differentiation	(~ 15 days)
IV. Chapter 3 sections 1-4, 6	Applications of Differentiation	(~ 12 days)
V. Various sections from ch 2, 3, and 8	Related Rates, L'Hopital's Rule	(~9 days)
VI. Chapter 5 sections 1, 3, 4, and 5	Exponential & Logarithmic Functions	(~ 12 days)
VII. Various sections from chapters 1 – 5	Trigonometric Functions	(~ 13 days)

### Second Semester Units:

I. Chapter 4, sections 1-6	Antiderivatives/Integration	(~ 20 days)
II. Chapter 5, sections 2, 4, 5, 7 Chapter 6, sections 2, 3	Integrals of Logs and Exponentials, Slope Fields and Differential Equations	(~ 15 days)
III. Ch 7, sections 1, 2	Area and Volume	(~ 11 days)
IV. AP Exam Review		(~ 35 days)

**Practice:** Homework/classwork is as vital to your success in this class as attendance. Practice will be assigned daily and given in many forms such as homework, extra practice, ticket out the doors, etc. Students will not be penalized for incorrect answers on homework assignments, but they will receive a zero if they have not at least attempted to solve each problem assigned.

**Quizzes and Tests:** Several quizzes will be given throughout each unit, and a test will be given at the end of each unit. These will be consistent with the material that has been covered in class and through homework assignments. Although they will primarily cover only the current unit being studied, problems that require knowledge from past topics may also be included. Tests will often be in the format of the AP exam (both multiple choice and free response questions), and will be graded in a manner similar to the exam. Because of this, all problems that require rounding must always be rounded to 3 decimal places unless stated otherwise in the problem. Points will also be deducted for missing or incorrect notation.

**Notebooks:** Each student must maintain a notebook and copies must be kept of all notes, homework, worksheets, quizzes, tests, and problems of the day. Each day's notes and homework assignments should be labeled with the date and the chapter and section being studied. All sections of the notebook should be maintained in a neat and organized manner.

### Textbook Info

- *Calculus of a Single Variable*, 10<sup>th</sup> Edition, ©2014, Brooks/Cole Cengage Learning, 9781285060330, \$181.75
- Online textbook homework pages:  
[http://college.cengage.com/mathematics/blackboard/content/larson/calc8e/calc8e\\_solution\\_main.html?CH=00&SECT=a&TYPE=se](http://college.cengage.com/mathematics/blackboard/content/larson/calc8e/calc8e_solution_main.html?CH=00&SECT=a&TYPE=se)

### Graphing Calculator

Students come to AB Calculus already knowing the basics of operating a graphing calculator. Students make extensive use of the TI-84 PLUS calculator. Each student is required to have his or her own calculator. They can graph a function in a variable-sized window and use the ZOOM feature on various parts of the graph to support their work. Many homework problems and about half of the problems on quizzes and tests are done without the use of the graphing calculator. Since the AP Exam is half calculator and half non-calculator, I feel that it is very important for students to have practice working problems both ways. We also discuss the techniques needed to use the calculator most efficiently (storing functions in the  $y =$  screen, storing values that will be used later in the problem, etc.). The TABLE feature builds on the graph in our initial discussions of how to analytically calculate the limit of a function. Students also use their calculators to examine various mathematical ideas, such as the asymptotic behavior of functions, limits and continuity, numerical differentiation and integration, points of inflection, Riemann

sums, slope fields, drawing a solution curve on a slope field, sketching implicitly defined function, and supporting their answers to various problems. Students will also use the graphing calculators to determine the reasonableness of answers found through algebraic and analytic means.

### **Rule of Four**

For each new major idea, we examine the concept graphically, verbally, numerically, and algebraically. Students are given many opportunities to work problems presented in these ways. Students will often be asked to communicate their reasoning in words through the use of various projects and writing assignments. These answers must be in complete, well-written sentences.

### **AP Review**

Four weeks before the AP Exam is devoted to review. During this four-week period, students will take two practice AP exams using AP Released Exams. The first exam gets the students used to the timing aspect for the AP exam. After this exam we review all questions and material. The second AP exam is weighted the same as the course final exam.

### **Grading Scale**

Formative Assessments:	10%	Tests:	50%
Quizzes/Project(s):	20%	Final Exam:	20%

**Make-up Work:** Making up work due to absence is the responsibility of the student. Make-up work will be accepted up to one week after the return of an excused absence(s). **You WILL make up any missed quizzes or tests on the day of your return.** You may do this either before school or during the class period. **Missing a review day does not exempt you from taking the assessment.** If a quiz is not made up by test day, the test grade will be put in for the quiz. You may turn in homework the next day for half credit.

### **Recovery Policy**

Opportunities designed to allow students to recover from a low or failing cumulative grade will be allowed when all work required to date has been completed and the student has demonstrated a legitimate effort to meet all course requirements including attendance. Students should contact the teacher concerning recovery opportunities. Teachers are expected to establish a reasonable time period for recovery work to be completed during the semester. All recovery work must be directly related to course objectives and **must be completed ten school days prior to the final exam.** Students may not initiate recovery until after the second test of the semester. The current overall grade must be 74 or below in order to initiate recovery. The recovery process must be initiated by the **student** within **five** days of the student receiving the graded assignment and the grade being posted to HAC. Once the recovery test is graded, it will be averaged with the original test for a maximum grade of 75.

#### **Eligibility**

In order to be eligible for recovery, student must

- put forth a legitimate effort on all assignments
- Have NO zeros in the gradebook. I will not allow any make-up work to be completed.

### **Help Hours**

Extra help will be available upon request. Talk to your teacher about help sessions.

### **Tardy Policy**

- 1<sup>st</sup> Tardy – Warning
- 2<sup>nd</sup> Tardy – one day private detention with teacher
- 3<sup>rd</sup> Tardy – refer to administrator and two days public detention
- 4<sup>th</sup> Tardy and beyond – refer to administrator and one day Saturday school

### **Classroom Expectations**

In addition to the policies described in the student handbook, I expect all students to be respectful and considerate of their classmates and teacher. Everyone in my class should be there to learn, and behavior that disrupts the learning environment will not be tolerated.

### **Concerning Calculator Use**

The storing and/or use of information not specifically authorized by the teacher on a calculator used on a test, quiz or other graded exercise are a violation of the Honor Code. If a student borrows a calculator from another student in a different class and the calculator has stored information related to the graded exercise, it will be considered an Honor Violation.

***\*Syllabus is subject to change at teachers' discretion\****