AP Calculus AB

Fall 2017

Description

Differential Calculus is the mathematical study of change. It uses the concept of "limits" to take a sequence of approximations called average rates of change, over smaller and smaller intervals, and analyzes if this sequence is approaching a specific definite value; if so, this value is defined to be the "instantaneous rates of change". This process is known as differentiation, and is critical in the study of Physics, Engineering, Economics, Finance, and many other fields.

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Book: *Thomas' Calculus*, Weir, Hass, Giordano, 11$^{\text{th}}$ edition

Grade Components

Classwork:	10%
Homework:	10%
Quizzes:	40%
Exams:	40%

Classwork consists of participation in discussion, and activities such as team quizzes, worksheets, and other group work. Classwork activities are normally be graded on a scale of zero to ten.

Homework exercises from the textbook will be assigned daily to be completed before the next class. These will be graded on a scale of zero to ten based on the attached rubric. Students may be asked to work out their completed homework on the board during class.

Quizzes are about twenty minutes long and occur almost every week, normally on Friday, covering the previous week's worth of material. These will be graded on a scale of zero to ten.

Exams are an hour long and occur every other week on Friday. These will be graded on a scale of zero to one hundred points. Notebooks will be collected for review on exam day.

The four grade components listed above will produce two quarter grades.

Additionally, a final exam will be given, and the ultimate semester grade will be the average of the two quarter grades and the final exam. All students are expected to take the AP Calculus AB examination, which is scheduled for Tues, May 5, 2015.

Course Outline

Week	Beginning	Topic	Sections
Week 0	Aug 25	Sets of Numbers	Notes
Week 1	Sep 1	Real Line and Cartesian Plane	1.1, 1.2
Week 2	Sep 8	Real Valued Functions	1.3, 1.4, 1.5
Week 3	Sep 15	Trigonometry and Calculators	1.6
Week 4	Sep 22	Limits	2.1, 2.2, 2.3
Week 5	Sep 29	Infinite and Sided Limits	2.4, 2.5
Week 6	Oct 6	Continuity and IVT	2.6, 2.7
Week 7	Oct 13	Derivatives	3.1, 3.2, 3.3
Week 8	Oct 20	Trigonometric Derivatives	3.4
Week 9	Oct 27	Chain Rule	3.5, 3.6
Week 10	Nov 3	Related Rates	3.7
Week 11	Nov 10	EVT and MVT	4.1, 4.2
Week 12	Nov 17	Monotonicity and Concavity	4.3, 4.4
Week 13	Nov 24	Thanksgiving Break	
Week 14	Dec 1	Optimization	4.5
Week 15	Dec 8	L'Hospital's Rule and Newton's Method	4.6, 4.7
Week 16	Dec 15	Final Exams	

Class Expectations

(a) *Respect:* Students are expected to treat each other, the teacher, and the classroom environment with respect. This includes arriving on time, focusing on the material, and avoiding unnecessary and unrelated conversation or comments.

(b) *Preparedness:* Students are expected to take notes in class. This includes coming to every class with paper and pencil or pen.

(c) *Participation:* Students are expected to actively participate in class discussion. This includes attentiveness, asking pertinent questions, supplying answers, making thoughtful comments, and otherwise being generally involved in the class discussion.

(d) *No distractions:* Distractions are not permitted. Specifically, no cell phones, ipads, ipods, lap top computers, or similar electronic objects are allowed in the classroom. You may not have books or notes from other classes open on your desk during our class.

(e) *Calculators:* A graphing calculator capable of finding zeros and computing definite integrals is required for the AP Calculus AB test. A list of allowed calculators is available on the AP web site.

Homework Policy

Students should take pride in their homework assignments. Homework should be neat and thorough. You may discuss problems with other students and work together, but you must write your solutions in your own words while not looking at another persons solution. Copying someone else's work and putting your name on it is cheating, a form of academic dishonestly, and is not tolerable.

Homework is due at the BEGINNING of the next class period after it is assigned. Homework which is not turned in at the beginning of class will be considered late. Late homework loses one point (out of a maximum of ten) for each class it is late.

Homework Rubric

Each homework will be graded on a scale of 0 to 10 points, and will be judged according the the following ten criteria.

1. Write name and date in upper left corner.
2. Write the complete assignment at the top of the page (e.g., "Section 1.2 Numbers 5, 12, 15, 31, 42").
3. Write the problem statement, for each problem. If the problem statement is long, you may abbreviate it.
4. Attempt every problem.
5. Be neat and clear.
6. Be as thoughtful and accurate as possible in your interpretation of the problem.
7. Mathematics should be written in English. Use words, grammatically correct sentences, and paragraphs when appropriate.
8. Draw a picture where appropriate.
9. Solve the problem as correctly as you can.
10. If you cannot complete a problem because you do not understand something, describe to the best of your ability where you are stuck.

If your paper shows that you have satisfied these ten points, you will normally receive ten points credit.

It is recommended but not required that homework be written neatly on lineless $8\frac{1}{2} \times 11$ computer paper; this creates the easiest to read and easiest to handle papers. Students will be answering mathematics questions on lineless paper on college exams, so now is a good time to get used to it.