La Cañada High School
AP Calculus BC - Course Syllabus 2016-2017
Ms. DiFiore - Room 213

Course Goals as Defined by the College Board:

- Students should be able to work with functions represented in a variety of ways: graphical, numerical, analytical, or verbal. They should understand the connections among these representations.
- Students should understand the meaning of the derivative in terms of a rate of change and local linear approximation, and should be able to use derivatives to solve a variety of problems.
- Students should understand the meaning of the definite integral both as a limit of Riemann sums and as the net accumulation of change, and should be able to use integrals to solve a variety of problems.
- Students should understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus.
- Students should be able to communicate mathematics and explain solutions to problems both verbally and in written sentences.
- Students should be able to model a written description of a physical situation with a function, a differential equation, or an integral.
- Students should be able to use technology to help solve problems, experiment, interpret results, and support conclusions.
- Students should be able to determine the reasonableness of solutions, including sign, size, relative accuracy, and units of measurement.
- Students should develop an appreciation of calculus as a coherent body of knowledge and as a human accomplishment.

See the College Board Course Description for additional information.

Materials: Bring to class *every day*

1) Three-ring binder with notes, worksheets, assignments, and graph paper.
2) Pencil/pen and whiteboard marker
3) Graphing calculator (TI-83, TI-84, or TI-89)

Assignments: Assignments are a way for students to practice what they know and have learned in class. They are also an opportunity for students to self-assess, and identify their "stuck points", which will help them create new understanding. They will be given daily and are due the next class meeting.

Your name, the date, period, assignment title, page #, and problems must be written on all assignments.

Credit for assignments may be awarded in the following ways:

- Homework may be checked weekly, and a selection of problems may be graded according to a rubric like the one below. Students will have the opportunity in class to ask clarifying questions about assignments before turning them in at the end of the week for credit. If a student has a question about an assignment that is not addressed in class, he or she should seek additional support outside of class.
- Either the teacher or a peer may check homework for completeness.
- Students may be asked to use homework to complete an in-class quiz.

Binder: Throughout the semester, a binder containing all assignments, notes, quizzes, worksheets, etc., will be collected and graded for completeness, organization, and accuracy.

Participation: Students are expected to participate in all lessons. Students are responsible for taking notes, cooperating with groups, staying on task during activities, contributing to discussions, etc.

Assessments: Students should expect an assessment at least once per week. Tests and quizzes (including pop quizzes) will be used consistently to assess student learning. These assessments will typically be cumulative including all topics covered so far. Assessment items may be in a multiple choice, multiple response, comparison/matching, free response or other format. They may be graded for full or partial credit. One possible rubric for awarding partial credit is the following:

4	3	2	1	0
• Correct answer • Work shown that demonstrates a clear understanding of concept	• Correct answer • Work not clear/coherent ***OR*** • Incorrect answer • Work demonstrates clear understanding but with minor mistake(s) unrelated to assessed concept	• Correct answer • No work ***OR*** • Incorrect answer • Demonstrates some key understanding of concept	• Incorrect answer • Some work shown • Demonstrates very little understanding of concept	• Blank • Response unrelated to problem • Incorrect answer with no work shown

See "Exemplars Standards-Based Math Rubric" for further details

Sample Assessment problem types:

Procedural problems	Conceptual problems
Find y' if $y = x^2 + 3x + 2$	A particle with velocity at any time *t* is given by $v(t) = 2e^{2t}$ moves in a straight line. How far does the particle travel during the time interval when its velocity increases from 2 to 4?
Multiple Choice/Response problems	
If f is a continuous odd function and the $\lim_{x\to-\infty} f(x) = -3$, which of the following statements must be true? *Choose all that apply* a) $\lim_{x\to+\infty} f(x) = 3$ b) There are no vertical asymptotes c) The lines $y = 3$ and $y = -3$ are horizontal asymptotes. d) $\lim_{x\to4} f(x) = f(4)$	

For additional problem types, see released AP Calculus BC exams.

Work Load:

Assessments	=	65%
Classwork/Homework	=	20%
Final Exam	=	15%
TOTAL	=	100%

Standards for Mathematical Practice (per LCHS Policy): "During this academic year, you will continue to engage with the Standards of Mathematical Practice, be asked to practice structured student talk, and continue to justify your responses on assessments. This means that you will continue to work like Mathematicians do seeking answers and solutions but understanding that the correct answer is no longer the end point of your work in math, but rather the start. Particular emphasis will be placed on explaining why you chose the math operation you did and how you could apply this to real world applications. To this end, performance tasks that require you to employ your math learning will be essential. This will require you to persevere in the face of math challenges and this disequilibrium is essential to growth as a student of math. You will be supported in your work and you are asked to bring an open mind, willingness to work hard, and share your thinking in class as we improve together our math confidence.

- Students will be working on core math idea(s) each day.
- Students will be presented with clear math tasks daily and be asked to identify and employ multiple pathways to achieve solutions.
- Students will use a variety of resources with increasing effectiveness to build their problem solving abilities. This includes the necessity of sharing their thinking with their peers.
- Students will be asked to employ knowledge gained from earlier math courses and will be supported in this work. No longer can students "test and forget," but rather must continue to add to their body of math foundational skills.
- Students will be required to justify and explain why they selected the answer they did and disprove incorrect answers while balancing evaluation of the math strategies used to achieve that incorrect answer."

Academic Integrity: Students are expected to abide by the La Cañada High School Honor Code. Students are to do their own work, except where collaboration is permitted. This includes test taking, homework, class assignments and the original creation of papers and projects. **All work submitted by students should be a true reflection of their effort and ability.**

The following are examples of cheating:

> Claiming credit for work not the product of one's own honest effort, copying any material and submitting it as your own work, answering a test question by directly quoting another portion of the exam or quiz, providing unwarranted access to materials or information so that credit may be dishonestly claimed by oneself or others

Students who cheat will receive a zero on the assignment and a "U" citizenship grade for the quarter. Consequences of violations will be determined based on the Academic Honesty Policy, which should be consulted for further explanations and repercussions. Students who cheat should expect to be confronted by their teacher or staff member observing this behavior and be subject to any or all of the following additional consequences:

1. Notification of parents/guardian.
2. Establishment of a cheating record with the office of Discipline.
3. Referral of student to the Honor Court.

If you have any questions or concerns, I can be reached by email at *adifiore@lcusd.net*