calculus: the mathematical study of change

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*official course description:* Calculus introduces the study of limits, derivatives, and integration as well as their applications, but at a slower pace than AP Calculus. The curriculum provides a strong preparation rather than a replacement for college calculus courses. Success in calculus is closely tied to the foundation in algebraic reasoning that students have built in previous math courses. Students should have demonstrated mastery of material from courses that are the equivalent of four full years of high school mathematics before attempting calculus. A TI-84 calculator is recommended for use in this class and all math classes that follow.

 As an honors course, students will be involved in open-ended student-driven investigations, read complex passages to build background and depth, select and integrate appropriate technology into their study, solve challenging, multi-faceted problems, and complete projects relevant to real-world scenarios.

***what do we actually study in here?***Families of functions, limits, discontinuities of functions, rates of change and the derivative, derivative techniques, applications of the derivative (related rates, science, economics, optimization), the anti-derivative as an accumulator, applications of integration including areas and volumes. Because you do not take the AP exam, we will have more time to introduce and explore these unfamiliar topics, time otherwise spent preparing for the exam. You will be able to reason through mathematics problems verbally, numerically, analytically, and graphically.

The 3 overarching themes are functions: their behavior, graphs, and limits; the derivative: what it is, how it describes behavior, how to find it, and its applications in a variety of contexts; and integrals: how they accumulate amounts and differences, how they can find area, and how to solve their defined cases for all function families.

supplies

- 3-ring binder which always contains:

 1-subject notebook for notes (should only contain math class notes)

 loose leaf notebook paper

 loose leaf graph paper

 3 tab dividers: Handouts, Homework, Quizzes + Tests

 ruler

- 1-subject composition notebook for daily journals (stays in class)

- Colored pencils; regular writing pencils

- TI-84+ Calculator (in-class set available)

- Textbook: Larson, Hostetler, & Edwards. (2002.) *Calculus*. 7th edition.

- \*\*5 dollar math department fee\*\*

**What do I bring each day?** Binder as described, last night’s homework/handouts, textbook, pencils, calculator.

rules

1. Always be kind, to everyone and everything.
2. Come prepared with your materials, including last night’s assignment.
3. Come prepared to **think**.
4. Come prepared to **participate**.
5. Don’t be afraid. (To stop me, to ask me, to ask others, etc.)
6. CCA Handbook rules will be enforced.

work and grades

**At the start of each class, we will have a short assessment (3-5 items).** These are to be done in your daily journals which stay in the classroom. They will usually, but not always, be review, sometimes quite old.

**Homework is practice, and practice is essential. But I will not collect it daily.** Most of our assignments will be problems out of the textbook. You are expected to check the answer to odd-numbered problems in the back of the book, and re-do problems you miss. At the start of each class, I will display the answers to the even-numbered problems in class, where you are expected to correct your mistakes with a red pen. This is your time to ask me and your peers for extra assistance. Assignments are posted on Powerschool. Homework will be given a completion grade of 0, 3, or 5 out of 5, assessed as I walk around the room. Late work will receive a max of 4.

**Every quarter, I will conduct a binder check as a test grade**. If you keep up with your assignments, it is an easy A. It will ask you to refer to specific homeworks and handouts (but not notes) and copy down the solution or other requested information. We will do a “practice” run about a month into the first quarter as a task grade.

**All tests are cumulative**. Of course, the unit’s information will make up the bulk of the test, but expect old material on every test. I will prepare a study guide to help you focus your studying. Error analysis on all tests is required, and its grade weight will be up to my discretion. The final exam counts as 25% of your Spring grade.

Grade breakdown: Homework 10% Teaching Tasks: 40% Tests: 50%

**What if I miss school?** Check the class website (mcalc.weebly.com) for a daily summary and assignment. It is your responsibility to complete the homework and check the answers (which can be done with a peer or with me after school or in DS). I will then change the zero to its proper grade.

policies

DO limit your time out of the classroom. Disruptions affect everyone’s learning. Keep bathroom breaks to a min.

 A sign in/out sheet is kept by the door. Please record the time .

DO NOT use your phone as a calculator. We will use phones for research at times, but I will explicitly say when.

DO keep organized. Your binder will help you get the most out of your learning.

DO NOT procrastinate. Senioritis is contagious, but getting behind will leave you confused and frustrated. Avoid.

DO be prepared to explain your reasoning. Justify *why* as often as possible.

DO NOT be afraid of getting something wrong. Mistakes make new learning.

resources

Calculus is a difficult subject. I will post numerous links to a variety of help topics at mcalc.weebly.com/help

Directed studies is a perfect time for more help. Wednesday and Thursday are pre-assigned for AP Calculus, and you can always ask me for a pass. My planning periods are 1B and 2A.