

Luther Burbank High School  
Math Department  
Advanced Placement Calculus AB  
2024 – 2025

*Our goal is to graduate all students, to prepare them for success in higher education, and to be contributing members of the community*

**Teacher:** Nikhil Ranjan

**Room:** #3106

**Email:** [nranjan1@saisd.net](mailto:nranjan1@saisd.net)

**Schedule:** 7th Period on B-Days.

T/R: 1:15 PM – 2:50 PM

F: 11:15 AM – 12:25 PM

**Tutoring:** By appointment (subject to change)

**Conference:** 1st Period on A-Days.

M/W: 8:45 AM – 10:50 AM

F: 8:45 AM – 9:55 AM

**Course Overview:**

AP Calculus AB is an introductory college-level calculus course. Students cultivate their understanding of differential and integral calculus through engaging with real-world problems represented graphically, numerically, analytically, and verbally and using definitions and theorems to build arguments and justify conclusions as they explore concepts like change, limits, and the analysis of functions.

This is certainly a rigorous course and it is beneficial for students to have a strong background in Algebra, Geometry, and Trigonometry but even without it, the necessary skills can be acquired accordingly with diligent work. Like any AP class, if you put in the time and effort necessary, you will reap the benefits. Remember, everyone can succeed!

**Assessments:**

60% will come from Homework, Timed AP Practice Exercises, Quizzes, and other assignments

40% will come from the Exams that will be modeled on the AP Exams to a degree

**Topics that will be covered:**

- 1) Limits and Continuity
- 2) Differentiation: Definition and Basic Derivative Rules
- 3) Differentiation: Composite, Implicit, and Inverse Functions
- 4) Contextual Applications of Differentiation
- 5) Analytical Applications of Differentiation
- 6) Integration and Accumulation of Change
- 7) Differential Equations
- 8) Applications of Integration

**Classroom Policy:**

- 1) No cellphones (school-wide policy). I will be picking them up at the door.
- 2) All materials needed for class are there right when a student enters. They should grab what they need and be in their seat by the time class starts, working on the relevant introductory material.
- 3) Restroom passes (school-wide policy) will not be issued during the first 10 minutes of class and the last 10 minutes of class

**Materials needed:**

- 1) Notebooks (provided if a student doesn't have their own)
- 2) Pencils or Pens
- 3) Highlighters

**Instructional Methodology:**

The particular concepts covered in the AP Calculus AB course are listed throughout this syllabus. Particular attention is paid to helping students understand concepts from a variety of different avenues. Students discover numerical, graphical, and analytical methods of understanding concepts and are required to express their understanding through both the spoken word through in class presentations and in papers that will be presented that parallel their presentations. During the last two weeks of the course, each student is assigned free response problems from one of the AP Exams from 2004 – 2007.

Much learning and understanding can be gained from having a classroom that is student-centered in structure. This class aims to incorporate both copious amounts of direct instruction as well as activities that encourage inquiry-based learning to allow students to develop the necessary understanding and skills to gain an intuition on the subject. A combination of practical and conceptual practices will be engaged with for every topic to ensure that students get to understand what it means and why it works the way it does. This combination is the only natural way to approach higher level math just as when it was developed.

The course will feature exposure to past AP questions so students can also be presented with how the College Board themselves write questions and grade them. While this course doesn't aim to teach towards the test, this sort of preparation is supplementary and is supposed to help build the baseline knowledge for students so they feel more comfortable as the end of the year comes near.

**Role of Technology:**

The graphing calculator plays an integral role in both developing and applying concepts of calculus. Thus, it is *highly suggested* that all students enrolled in AP Calculus AB have access to a graphing calculator both in class and at home. If necessary, we can discuss checking out a calculator, but there will be a contract that needs to be signed to ensure the student understands the responsibility and potential consequences of using one. Although these calculators are available, free of charge from the school, students are encouraged to have their own graphing calculator. Instruction during class activities and lectures will be using the TI-NSpire. Any calculator from the TI family from TI 83 or newer will be the best.

**Please detach this page, sign and date it. It requires both your signature and the signature of your parent or guardian. This will need to be returned to Mr. Ranjan by August 29th . Please fill out the information below as it will serve as contact information for me if ever I need to contact you.**

**We have read and understood the requirements, philosophy of teaching, grading policy and materials required.**

**Parent Information:**

Printed Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
Cell Phone Number is Preferred

Email: \_\_\_\_\_

**Student Information:**

Printed Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
Cell Phone Number is Preferred

Email: \_\_\_\_\_

\_\_\_\_\_

**Parent Signature**

\_\_\_\_\_

**Student Signature**