



### Course Introduction

AP Calculus AB is a year-long Advanced Placement high school course designed to cover the material typically presented in the first semester of a 3 semester college Calculus series. The opportunity exists for students to earn college credit for the course upon passing the Advanced Placement Exam administered in May.

### Course Description

In this course students will become familiar with the two main branches of Calculus, differentiation and integration, along with additional topics such as limits, numerical approximations, and mathematical modeling. Emphasis is on conceptual understanding and real-world application. A strong foundation in pre-calculus mathematics is required as students will need to work with polynomial, logarithmic, exponential, rational, and trigonometric functions on a daily basis within a Calculus context. Technology is relied upon heavily to investigate concepts and perform computations, so each student must have a graphing calculator at his or her disposal. At the conclusion of the course, it is expected that each student will register for and take the College Board's AP Exam.

This is a yearlong course consisting of 9 units. Upon successful completion students will receive 1 credit towards high school graduation.

### Purpose of the Course

AP Calculus AB is designed to promote students' understanding of calculus through a multi-representational approach, focusing on graphical, numerical, analytical and verbal expressions of the calculus concepts.

### Course Prerequisites

Student should have earned a C or higher in both semesters of Precalculus.

### Course Overview

#### Semester 1

- Pre-Calculus Review
- Limits and Continuity
- Differentiation
- Applications of Derivatives

## Semester 2

- Integration
- Applications of Integrals
- Differential Equations and More Riemann Sums
- Supplemental Topics
- Preparing for the AP Exam

## Required Course Materials

Please access the list of course materials from the OC Online book ordering system and order your materials as soon as possible. Oftentimes, course materials are on back order and you may experience a delay in receiving them, causing students to fall behind in their online coursework. When ordering used or rented materials, be careful that online access codes are also current.

## Methods of Instruction

Students will be presented with an instructional video and supplemental written information for each topic in the course. Following the video, students will be required to complete practice problems, respond to discussion prompts, and complete end-of-unit activities to help prepare them for the AP exam.

## Methods of Evaluation

Students will demonstrate mastery through the following formative and summative assessments:

- 40% Assignments
- 10% Participation (Discussion Posts, Synchronous Sessions)
- 10% Quizzes
- 25% Final Exam
- 15% Unit Tests