AP Calculus AB Syllabus

Course Details

Course Code: 417000AW

Subject: Mathematics

Required Prerequisites: Precalculus Honors

Suggested Prerequisites: None

Recommended Grade Levels: 12th

Duration: Yearlong

Course Availability: A listing of when this course is offered in the current school year can be found on the VirtualSC Current Course Offerings page (opens in a new window).

Class Times: There are no scheduled class meetings for this course. Instead, students are expected to work on their own to meet the deadlines posted in the course pacing guide. Students should expect to spend 7-9 hours a week working on this course.

Textbook: Openstax Calculus Text Vol 1 and 2

Required Course Materials: TI 83/84 Graphing Calculator. If a calculator cannot be purchased or is unavailable, you may go to www.desmos.com (opens in a new window), which can be used on your computer or downloaded to your Android or Apple phone or tablet.

Outside Websites: A list of links to websites and online textbooks used in this course can be found here: VSC Course Links Document Folder (opens in a new window). Students will need to be able to access all of these links to access all course materials.

Final Exam: Students in this course take a VirtualSC final exam **AND** an Advanced Placement (AP) exam. Details on scheduling and taking final exams can be found on the Final Exam Page (opens in a new window) of the VirtualSC webpage.

Course Description

This Advanced Placement course introduces limits, differentiation, and integration of functions. Students will find and evaluate finite and infinite limits graphically, numerically, and analytically. They will find derivatives using a variety of methods including The Chain Rule and Implicit Differentiation. They will use the First Derivative Test and The Second Derivative Test to analyze and sketch functions. Subsequently, students will find antiderivatives using a variety of methods including substitution. They will evaluate integrals using a variety of methods including numerical integration. They will understand and apply Riemann sums, definite integrals, and The Fundamental Theorem of Calculus. In particular, they will differentiate and integrate logarithmic, exponential, and inverse trigonometric functions. They will solve simple differential equations that can be solved by separation of variables and use them to solve applied problems. They will use integration to determine the area between two curves, volume, and surface area. Finally, they will apply integration to determine work, center of mass, and fluid force.

The curriculum used in this course is guided by the College Board AP Calculus Course Description (opens in a new window).

Scope and Sequence

The scope and sequence used in this course is found in the College Board Approved AP Calculus AB Syllabus (opens in a new window).

Students will be sent a full list of assignments and their due dates at the beginning of the course.

Current pacing guides for this course can be found on the Current Course Offerings page (opens in a new window) on the VirtualSC website.

Course Grades

The final grade in this course results from the following:

- Coursework: 80%
- Final Exam: 20%

VirtualSC Details

Information on VirtualSC student guidelines, policies and technology requirements can be found in the VirtualSC Student Support Portal (opens in a new window).