

## 2023 Advanced Placement® Calculus AB

### About the AP® Calculus AB Summer Institute

The AP Calculus AB Summer Institute is designed to help teachers build a strong and successful calculus course and AP Program. Emphasis will be placed on rigor of content required for students to be successful on the AP exam, focusing on AB topics, and available resources. The course audit, course syllabus requirements and AP Classroom will all be reviewed during this APSI. Both new and experienced teachers will be given the opportunity to deepen their understandings of the AB course content, as well as explore and create resources that can be used in their classroom. Time will be allotted each day to share best practices and ideas as a group.

### Course Objectives:

The participants will:

- Review of AP Calculus AB Exam, CED's and use of AP Classroom
- Review and discuss AB Curriculum topics:  
Limits and Continuity, Definition and Basic Derivative Rules, Differentiating Composite Implicit and Inverse Functions, Contextual Applications of Differentiation, Analytical Applications of Differentiation, Integration and Accumulation of Change, Applications of Integration, Differential Equations
- Understand and learn to use the IPR (Instructional Planning Report) to reflect on improving student outcomes.
- Prepare a course syllabus, outline and pacing guide that meets the requirements outlined by College Board.
- Develop proficiency and use of AP Classroom to enhance student learning and exam preparedness.
- Understand how to use the data provided by AP classroom.
- Acquire and develop activities, formative and summative assessments to build student understanding and proficiency.
- Develop a library of digital resources, including videos, games and traditional resources for use in your classroom.

### Tentative Agenda:

#### Day 1:

Get off to a good start

- Starting the Year with local linearity
- Introduction to the CED's
- Exploring Limits and Continuity
- Definition of Derivative and Basic Derivative Rules

Tools and Resources to Support Struggling Learners

- Investigating online resources and building activities

#### Day 2:

Advanced Derivative rules and Existence Theorems

- Composite Implicit and Inverse Functions
- $f$ ,  $f'$ ,  $f''$  relationships
- Existence Theorems and their Justification

- Applications of differentiation; motion, related rates, optimization & L'Hôpital's rule

#### A Deep Dive into Using AP Classroom Applications of Integrals

- PPC's
- Topic Questions
- Videos
- Creating assessments

#### **Day 3:**

##### Integration

- Introduction to Definite Integrals and Riemann Sums
- FTC and Techniques of integration
- Applications of integration, Motion, Functions defined by integrals, accumulating rates of change, area and volumes of rotation.

##### Introduction to the Reading and Scoring FRQ's

- Grading FRQ's & data provided from past exams.

#### **Day 4:**

##### Creating a community of Learners

- Being part of the AP Community
- Best Practices and Favorite Activities
- Thinking about Diversity, Equity and Access in the AP Classroom

##### Slope Fields and Differential Equations

- Seeing relationships in slope fields
- Solving differential equations

##### Focus on Continuous Improvement using the IPR

- Preparing for next year's class.

Homework assignments will be focused on:

- creating a scope and sequence to use in the coming year
- creating a library of resources
- practice with using resources that are presented during the course.

**\*\*Changes may be made to the course agenda based on participant need and interest.\*\***

#### **What to bring:**

- A favorite activity, demonstration or simulation that you have found useful in your classroom to share (teachers new to AP Calculus AB should bring an activity that they have used successfully in another course)
- A lesson or activity that you would like to improve upon.
- Your CED Binder- a digital version can be found in AP Classroom or on the College Board website.
- A blank calendar to create your outline and pacing guide for the upcoming year.
- An academic calendar for your school.

#### **Consultant:**



**Ingrid Pariseau** has been teaching mathematics for over 20 years and has taught all levels of secondary mathematics from 7th grade through Calculus. She holds a B.S. in Mathematics from the State University of NY at Albany and a M.Ed. in Curriculum and Instruction from Chapman University. She has lived and taught in several states around the country, spending the majority of her teaching career in Texas and Tennessee. She first started teaching AP Calculus in 2006. Actively involved in professional development at the district level throughout her career, in 2017 she began consulting for NMSI working with AP Calculus teachers. She presented at APAC in 2019, is an AP Calculus reader and a consultant for the College Board. She is happily married with 2 adult children and, in her free time, enjoys traveling, reading, watching movies and sports, hiking, biking and running.