Pre-AP High School Mathematics

Learning Outcomes:

Participants will learn how to align a curriculum vertically to give students a conceptual understanding of mathematics and be able to:

-- Align a curriculum across grade levels by organizing instruction around the key concepts of mathematics
-- Identify, develop and use rich mathematical problems and activities that formatively assess students' understanding of key concepts, problem-solving methods and reasoning skills
-- Adapt AP free-response questions for use in Pre-AP classes
-- Create an Action Plan for sustaining an AP Vertical Team

Description:

This course will give high school teachers the tools to strengthen an AP Vertical Team and to align the curriculum vertically across grade levels (K-college) within the mathematics discipline. Members will learn how to create a curriculum that emphasizes key concepts of mathematics at all levels of instruction. Through the implementation and vertical articulation of concrete strategies, participants will gain a deeper understanding of the skills and knowledge students need at the Pre-AP level.
Welcome to Pre-AP Mathematics!

My name is Cheryl Williams, and it is my delightful task to serve as your workshop leader for the AP Summer Institute. As a high school mathematics teacher, College Board Consultant, AP exam reader, NMSI consultant, and college algebra teacher, I am looking forward to our week together and hope your expectations are far exceeded by your actual experience.

This course will give middle and high school teachers the tools to strengthen an AP Vertical Team and to align the curriculum vertically across grade levels (K-college) within the mathematics discipline. Members will learn how to create a curriculum that emphasizes key concepts of mathematics at all levels of instruction. Through the implementation and vertical articulation of concrete strategies, participants will gain a deeper understanding of the skills and knowledge students need at the Pre-AP level. We will engage in sharing curriculum and methodology as well as exploring the possibilities for systematically instituting a vertically aligned curriculum in your individual schools and school districts.

Participants will learn how to align a curriculum vertically to give students a conceptual understanding of mathematics and be able to:

- Align a curriculum across grade levels by organizing instruction around the key concepts of mathematics.
- Identify, develop and use rich mathematical problems and activities that formatively assess students' understanding of key concepts, problem-solving methods and reasoning skills.
- Adapt AP free response questions for use in Pre-AP classes.
- Create an Action Plan for sustaining an AP Vertical Team.

Below is a tentative agenda for each day.

**Day 1:** Introductions  
College Board’s Mission on Access and Equity  
AP Standards and Role of Pre-AP in Developing Those Standards  
What is Pre-AP Mathematics?  
Why is a Pre-AP Team Important?

**Day 2:** Establishing a Pre-AP Vertical Team  
Strategies Used by Pre-AP Teams  
Collegiality & Maintaining a Pre-AP Team  
Identify & Develop Pre-AP Strategies  
Vertically Align Curriculum

**Day 3:** Assess Student Progress  
Factors of Success  
Assessing Readiness  
Pre-AP: Major Activities
Day 4: How to Increase Enrollment for AP Calculus & AP Statistics Classes
   Study Some Knowledge & Skills for Students Success in AP Calculus & AP Statistics
Next Steps
   College Board Web Sites

The workshop conforms to:
   • The College Board’s mission, particularly access and equity
   • NCTM Standards
   • AP Calculus and AP Statistics Topic Outlines
   • AP Vertical Teams Approach

The workshop provides:
   • Content background for teachers that illustrate the Pre-AP concept
   • Activities for students across grade levels
   • Activities meant to illustrate good pedagogy (various instructional approaches including cooperative learning)
   • Explorations with discussion questions
   • Opportunities for collaboration and reflection

Participants are asked to bring:
   • A scientific and/or graphing calculator
   • Mathematics Standards for your State, District and Grade Level
   • Textbooks of Math Courses they will teach
   • Curriculum Maps/Guides
   • Site, District, and State Standards
   • Copies of Assessments
   • Copy of a Successful Lesson/Project/Activity
   • Paper, Pencils, and Rulers
Mrs. Cheryl L. Williams’ academic qualifications include a Masters Degree in Education, a Bachelors Degree in Pure Mathematics, a Professional Clear Administrative Services Credential, and a Professional Clear Single Subject Credential in Mathematics. She has worked in the Elk Grove Unified School District since 1999. She worked as a Vice Principal at Monterey Trail High School for eight years prior to returning to be a classroom teacher.

As a teacher, she has over ten years experience and has taught at the middle school, high school and college level. She has taught the following classes: AP Calculus AB, Pre-Calculus, Trigonometry, Algebra 2, Algebra 1, CAHSEE, Math Lab, Algebra 1A Strategic, Algebra 1B summer program, and Algebra 2 summer program, College Algebra, and Integrated Mathematics 1. She has worked as a Mathematics Department Chair, a Teacher-in-Charge, a Vertical Teams' Regional Coordinator, and an Independent Study Program Coordinator.

Mrs. Williams has been a consultant for the College Board since 1999 and served on their Equity and Access Committee. In July 2014, she presented at the 2014 AP Annual Conference in Philadelphia, PA. She has conducted several workshops and AP Summer Institutes for the College Board throughout the United States. In addition, she has been an AP Calculus Reader for the College Board since 2009. She is also a National Math and Science Initiative (NMSI) consultant. In addition, Mrs. Williams has also served as a Western Association of Schools and Colleges (WASC) Visiting Committee member.