AP BIOLOGY SYLLABUS

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Overview

Over the course of this four-day APSI, new and experienced teachers alike will become familiar with the newly updated Course and Exam Description (CED) in AP Biology for the 2019-2020 academic school year. The updated CED organizes the AP Biology course into eight commonly taught units:

1. Chemistry of Life
2. Cell Structure and Function
3. Cellular Energetics
4. Cell Cycle
5. Heredity
6. Gene Expression and Regulation
7. Natural Selection
8. Ecology

Outline

This comprehensive course will provide information and experiences on how to teach both the classroom and laboratory components of an AP® Biology course. Activities to support an understanding of the structure and design of the AP® Biology Curriculum Framework will be a major part of this summer institute. There will be instruction on how to prepare or revise an Audit, based on the AP® curriculum framework.

The updated course curriculum clearly connects each learning objective to specific essential knowledge and includes biology-specific science practices that build skills to help students learn to think and act like biologists. Particularly important will be the time and skill set necessary to support teachers in implementing more inquiry-based investigations. Participants will gain experience with investigations in the updated lab manual AP Biology Lab Investigations: An Inquiry-Based Approach (2019) as well as explore creative alternatives to these investigations. We will also examine the AP Biology Exam design and essay (FRQ's) grading approaches. There will be time for participants to create a daily schedule and calendar that they may submit as part of the AP Course Audit process.

To learn more about the recent updates for AP Biology, refer to AP Central AP Biology Updates page.

Participants will learn how to organize their AP® Biology course in order to have time to present the material to the students as well as to conduct the laboratory investigations.

The nature of the AP® Biology Exam and the importance of the grading process will also be presented. A format of the 2019 AP® Biology Exam will be examined. A review and discussion of the standards for the free response questions from this Exam will also be included. Teachers will learn methods to better prepare their students for writing the answers to the free response portion of the AP® Exam.

Examples of Investigative Labs to be conducted during the week:

- Investigation 11: Whole Plant Transpiration
- Investigation 4: Diffusion and Osmosis and Water Potential
- Investigation 2: Mathematical Modeling – Hardy-Weinberg or Alternatives
- Investigation 13: Enzyme Catalysis
- Investigations 5 & 6: Cell Respiration and Photosynthesis
- Investigation 9: DNA Gel Electrophoresis – Foodborne Illnesses
- Investigation 12: Animal Behavior – Pill Bugs

Included:

- College Board Workshop Handbook
- Notebook full of consultant-generated handouts and activities.
- Sample Textbooks
- Biology Lab Materials
- Student Laboratory Investigation Manual
- Technology Assignment Options
- Teacher Laboratory Investigation CD
- USB Drive
- Continental Breakfast and Catered Lunch

Emphasis:

- The AP® Curriculum Framework
- The AP® Biology Investigations (Inquiry-based)
- The AP® Biology Exam
- Free Response Question Grading and Analysis of the 2018 Exam
- Incentive-based Learning Strategies
- Sharing Strategies to Help Students Grow Academically
- Sharing of AP® Biology Teaching Strategies and Activities
- Review for the AP® Biology exam
- Transitioning to the Curriculum Framework with its inquiry-based, critical-thinking, problem-solving emphasis

To bring:

A digital version of the following: an investigation you used (or would like to use) with your students beyond what is found in the AP Biology College Board Student Laboratory

Investigations Manual and an assessment that allowed you the opportunity to measure one of the Learning Objectives from the Curriculum Framework.

Schedule

** Investigative labs that will be conducted during this APSI

- Monday, Day 1
  - The Curriculum Framework - Planning and Pacing
  - Introductions, Goals, Consultant's Notebook, College Board Handbook, Textbooks
  - Curriculum Framework: Big Ideas (BI), Enduring Understandings (EU), Essential Knowledge (EK)
    - What about the LO's and SP's?
  - Lunch
  - AND...How much Anatomy & Physiology needs to be covered in the course?
  - Lab Manual: *AP® Biology Investigative Labs: An Inquiry-Based Approach*
  - Investigation 4: Diffusion and Osmosis ** BI 2
  - Investigation 11: Transpiration ** BI 4 (will take measurements each day

- Tuesday, Day 2
  - What is the Big Idea about the Investigative Labs?
    - Water Potential Calculations for Investigation 4 ** BI 2
    - Using Lab Investigations to Organize a Teaching Plan for the Year
    - Investigation 8: Bacterial Transformation ** BI 3
    - Lab Equipment/Materials – Ward's, Carolina, Flinn, Bio-RAD, Probeware
    - Lunch
    - Investigation 13: Enzyme Activity BI 4 – Toothpickase
    - Investigation 12: Behavior BI 4 **
    - Discussion of Lab Investigations 1-BI 1, 2 -BI 1, 3 -BI 1, 6-BI 2, 7-BI3, 10-BI 4

- Wednesday, Day 3
  - Let's Work on Those Skills
    - Syllabus and AP Audit: Plan with a Focus on Skills and the Science Practices
    - Equity/Access and Diversity of Learners
    - Investigation 9: Restriction Enzyme Analysis of DNA ** BI 3 (Forensics)
    - Lunch
    - Investigation 5: Photosynthesis ** BI 2- Other Activities Using Plants
    - Lab Notebooks, Lab Reports, Mini-posters
    - The AP® Biology Exam and the 2018 FRQ's (Long)

- Thursday, Day 4
  - Mathematics and Statistics: Biology's Next Microscope
    - The 2018 FRQ's (Short) - continued from Wednesday afternoon

- Making Time to Review for the AP Biology Exam
- Calculating Transformation Efficiencies from Investigation 8 BI 3**
- Calculating Restriction Fragment Lengths for Investigation 9 BI**
- Lunch
- Results from Investigation 11: Transpiration BI 4
- Chi Square Analysis: Wooly Worm Lab – What is a Null Hypothesis?
- Sharing of Best Practices - USB Drives
- Reflection on goals for the week