

2016
MONTANA

Advanced Placement®* SUMMER INSTITUTE

June 27 to 30, 2016, in Bozeman, Montana

AP® Biology
AP® English Literature and Composition
AP® Statistics

This AP Summer Institute has been endorsed by



Advanced Placement
Program

Registration STILL OPEN AT:

<http://events.constantcontact.com/register/event?llr=bg5mnelab&oeidk=a07ec3v88yv60e75b06>

Just getting AP® started at your school?

See this link:

<http://apcentral.collegeboard.com/apc/html/how-to-start-an-ap-course/how-to-start-an-ap-course.html>

To help Montana high schools and teachers implement and build quality AP® programs that:

- **foster student engagement;**
- **develop college/career ready students; and**
- **prepare students for success on AP® assessments.**

All three workshops are open to both new and experienced AP teachers and are directed by exemplary teacher presenters who have been selected for this work by the College Board. Scroll down for full presenter biographies, workshop syllabi, supply lists, and schedules.

AP® Biology with **Kelcey Burris** of Vancouver, Washington

Mr. Burris has been teaching AP® Biology for 15 years and has been a reader for the AP® Biology Exam for the last five years. He earned a BA in Biology and Chemistry from Concordia University in Portland, Oregon, and a Master's in Education from Florida Gulf Coast University in Fort Myers, Florida. He initiated AP® Biology courses in three high schools. His workshop is organized around the four "Big Ideas" in the course: Evolution, Energy, Information, and Interactions. Each day includes classroom work, lab work, how to teach AP® Biology, best practices, and new ideas.

AP® English Literature and Composition with **Marilee Eyre** of Beaver, Utah

Mrs. Eyre loves teaching and watching her students succeed. She has taught AP® English at Beaver High School for 25 years. She is also an adjunct professor at Southern Utah University, and she was selected Teacher of the Year and Utah Girls Golf Coach of the Year. She has been an AP® English Literature and Composition reader for 13 years, is a consultant and mentor for the College Board, reviews textbooks for various publishers, and grades practice AP® exams. She has coached debate for 17 years and is a National Forensics League Diamond Coach. She is delighted to work with teachers in Montana.

AP® Statistics with **Bob Smidt** of Los Osos, California

Dr. Smidt has been involved with AP® summer institutes for 10 years. His enthusiasm for the topic of statistics is infectious while, at the same time, he understands that many teachers of math or science have minimal background in statistics. His workshop will cover the four major content areas of AP® Statistics: exploratory data analysis, data collection, probability, and statistical inference, providing techniques for presenting the ideas with which students struggle the most. Analysis of recent exam questions will build participants' understanding of the course.

Plan to participate if you:

- *plan to teach an AP® course in the near future;*
- *are currently teaching an AP® course and want to hone your skills;*
- *serve as a distance learning facilitator for an AP® course through Montana's Digital Academy or other provider; or*
- *want to upgrade your marketability in the teaching profession.*

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The **COSTS** of the Institute are:

- \$475 participant tuition (includes lunch Monday through Thursday and breakfast Monday and Wednesday) (tuition for AP® Summer Institutes out of state runs \$525 - \$750) plus a \$25 lab fee for participants in AP® Biology;
- travel, lodging, and meals are the responsibility of school districts or participants;
- \$135 for optional two graduate continuing education credits from MSU;
- no additional cost for 30 renewal units.

Each workshop participant will receive **WORKSHOP MATERIALS** both on a USB drive and in a binder. A variety of applicable textbooks and other resources will be available for review and, in some cases, will be distributed to participants.

The **LOCATION** of the Institute will be Willson School (404 W. Main St.) and Bozeman High School (205 N. 11th Ave.), Bozeman, Montana. **Meet at Willson School at 8 a.m., Monday, June 27**, for breakfast and orientation. Workshops run from 8 a.m. to 5 p.m. for four days.

The following Bozeman motels welcome APSI participants:

Holiday Inn (\$138.00)
5 Baxter Lane; 406-587-0927
[Holiday-inn.reservationcounter.com/](http://holiday-inn.reservationcounter.com/)

The Bozeman Element (\$249.00)
25 East Mendenhall; 406-624-3336
<http://www.elementbozeman.com>

Lewis and Clark (\$139.00)
824 West Main Street; 406-586-3341
www.lewisandclarkmotelbozeman.com
800-332-7666

... Or research other options at: <http://bozemancvb.com/lodging>.

The OPI makes reasonable accommodations for any known disability that may interfere with a person's ability to participate in training. Persons needing an accommodation must notify the OPI no later than June 15 to allow enough time to make arrangements. To make your request, call 406-444-0769 or through the [Montana Relay 711](#).

The OPI is committed to equal opportunity and nondiscriminatory access to all our programs and services. For information or to file a complaint, contact OPI Title IX/EEO Coordinator at 406-444-2673 or opipersonnel@mt.gov.

- *Each workshop is limited to 30 participants.*
- *Successful registrants will be notified by email.*
- *When a workshop is full, further registrants will be placed on a waiting list.*

Click here to be transferred to the online registration system:

<http://events.constantcontact.com/register/event?llr=bg5mnelab&oeidk=a07ec3v88yv60e75b06>

2016 MONTANA Advanced Placement® SUMMER INSTITUTE

AP® Biology *Presenter* Kelcey Burris

Kelcey Burris is currently the department chair of Science and teaches AP® Biology at Union High School in Camas, Washington. He started his teaching career in Naples, Florida and has been teaching AP® Biology for the past 15 years. As a College Board Endorsed Consultant for AP® Biology and AP® Insight he has presented one-day and week-long workshops throughout the United States, including at the annual AP® National Conference and various summer institutes. Kelcey has been a reader for the AP® Biology Exam for the past five years. He earned a Bachelor of Arts in Biology and Chemistry from Concordia University in Portland, Oregon, and a Master's in Education from Florida Gulf Coast University in Fort Myers, Florida. He is the head coach for both boys' and girls' soccer at his high school and enjoys reading, watching movies, and spending time with his wife and daughter.



Agenda

Monday, June 27 **Big Idea #1: Evolution**

Overview

- Introductions, safety rules/contract, resources you have at your desk, "Housekeeping"
- Nature of Science introduction
- Redesigned course: Big Ideas, Enduring Understandings, Science Practices and Learning Objectives
- Diversity in the classroom: Equity and access - *How to increase enrollment in AP® Biology*
- AP® Biology Exam: Format (multiple choice, grid-in, and free response)
- College Board AP® Biology Lab Manual
- Teaching resources: *AP® Community and AP® Central*
- How do "I Teach" Hardy-Weinberg?
- Challenge Areas: *What are they? How can you teach them better?*
- Big Idea 1 vertical alignment ideas and strategies
- Unit planning – *Backward Design and audit syllabus preparation*
- Share Big Idea #1 best practices and ideas: *Workshop Consortium WikiSpaces and DropBox*

Big Idea #1 Labs and Activities

- HHMI Big Idea 1 Resources
- AP® Lab #1 – Artificial Selection- discussion
- AP® Lab #2 – Mathematical modeling: Hardy-Weinberg
- Hardy-Weinberg simulation (*Old Lab Manual*)
- AP® Lab #3 – BLAST Lab
- Alternative Labs and Activities - *POGILS*
- Set Up - AP® Lab #11 – Transpiration: Whole Plant Transpiration and Natural Selection in Brine Shrimp Lab

Tuesday, June 28 **Big Idea #2: Energy**

Overview

- Questions and answers from Big Idea #1: Evolution
- What is Inquiry: Structured (traditional cookbook Labs), guided inquiry, and open inquiry
- How do "I teach" photosynthesis and cellular respiration?
- AP® Biology Exam: Format (multiple choice, grid-in, and free response)
- Chief Reader Report: Discuss FRQ #1 and 2 from the 2016 AP® Biology Exam
- Lab write ups: lab reports, CERR, design an experiment diagram, and mini-posters
- Big Idea 2 vertical alignment ideas and strategies
- Unit planning – *Backward Design and audit syllabus preparation*
- *Share Big Idea #2 best practices and ideas*

Big Idea #2 Labs and Activities

- AP® Lab #4 – Diffusion and Osmosis - Alternative methods and surface area agar cubes

- AP® Lab #5 – Photosynthesis: Floating leaf disk - *Shoebox Lab* and with oxygen probes with spinach
- AP® Lab #6 – Cellular Respiration: Traditional method and with oxygen probes
- Alternative Labs for Big Idea 2: Bio-rad photosynthesis and cell respiration - algae balls - *system connections*
- AP® Lab #11 – Transpiration: Whole plant transpiration - data collection (weigh plant)

Wednesday, June 29 Big Idea #3: Information

Overview:

- Questions and answers from Big Idea #2: Energy
- Unpacking illustrative examples and exclusion statements: *What do they mean?*
- Math in Biology: How to teach students with “varying” math abilities
- How do “I teach” cell communication?
- Chief Reader Report: Discuss Free Response Questions 3, 4 and 5 from the 2016 AP® Biology Exam
- Big Idea 3 vertical alignment ideas and strategies
- Unit planning – *Backward Design and audit syllabus preparation*
- *Share Big Idea #3 best practices and ideas*

Big Idea #3 Labs and Activities:

- HHMI Resources – cell communication
- Modeling: cell communication and meiosis and fertilization
- AP® Lab #7 – Cell Division: Mitosis and meiosis – alternatives
- AP® Lab #8 – Biotechnology: Bacterial transformation - pGLO
- AP® Lab #9 – Biotechnology: Restriction enzyme analysis of DNA (gel electrophoresis) and alternative methods
- pHet simulation of lac operon - ideas for modeling operons
- AP® Lab #11 – Transpiration: Whole plant transpiration – data collection (weigh plant)

Thursday, June 30 Big Idea #4: Interactions

Overview:

- Questions and answers from Big Idea #3: Information
- How do “I teach” enzymes? How do “I teach” the systems (nervous, endocrine, and immune)?
- Chief Reader Report: Discuss Free Response Questions 6, 7, and 8 from the 2016 AP® Biology Exam
- How do you “cover” everything? – *Planning and Pacing*
- AP® Insight – What is it?
- Case Studies – *National Center for Case Study Teaching in Science*
- Big Idea 4 vertical alignment ideas and strategies
- Unit planning – *Backward Design – sharing of units*
- Share Big Idea #4 best practices and ideas

Big Idea #4 Labs and Activities:

- HHMI Big Idea 4 Resources
- Alternative Big Idea 4 Labs and Activities
- *BioRad ELISA Immuno Explorer Lab - Immune System and Cell Communication*
- AP® Lab #8 – Transformation: Analyze pGLO Lab Results - Calculate Transformation Efficiency
- AP® Lab #10 – Energy Dynamics: Connection to Systems
- AP® Lab #11 – Transpiration: Final Data Collection and Final Analysis/Calculations
- AP® Lab #12 – Animal Behavior: *Shoebox Lab*
- AP® Lab #13 – Enzyme Activity:
- Potato Catalase Enzyme Lab: Cornell Institute of Biology Teachers and Catalase Lab with Probes

What to Bring to the Institute

- laptop computer or tablet with keyboard,
- scope and sequence of AP® Biology or similar course from your high school,
- clothing to accommodate warm and cool classrooms, and
- check to pay for MSU credit (optional). Remember, 30 renewal units are free of charge.

All participants will receive:

- a notebook containing all institute materials,
- a variety of sample texts and resources, and
- a flash drive for downloading electronic copies of materials.

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AP® English Literature and Composition

Presenter Marilee Eyre

Marilee Eyre loves teaching and watching her students succeed. She has taught AP® English at Beaver High School for 25 years. She graduated with a double major in English and business education from Southern Utah University, where she was the Outstanding English Student and one of four Outstanding Business Education Students. Marilee completed a master's degree from Southern Utah University as well as an administrative and an English as a Second Language endorsement. She is an adjunct professor at Southern Utah University, and she was selected Teacher of the Year and Utah Girls Golf Coach of the Year. Mrs. Eyre has been an AP® English Literature and Composition Reader for 13 years and is a consultant and mentor for the College Board. She presents Saturday and five-day workshops throughout the United States. Marilee has reviewed textbooks for various publishers and grades practice AP® exams.



Marilee has coached debate for 17 years, and her students have won multiple state championships and placed at national tournaments. Mrs. Eyre is a National Forensics League Diamond Coach and has been Utah's Debate Coach of the Year.

Mrs. Eyre enjoys keeping active and playing sports. She loves to golf and helped initiate the girls' golf program in Utah. She currently coaches girls' golf at Beaver High School and has coached softball for several years.

Marilee is delighted to present and meet teachers in Bozeman, Montana.

Agenda

Objectives

Participants will learn and share strategies and best practices to help students enjoy learning and performing well in their advanced English classes and on the AP® English Literature exam. We will explore a variety of works and share assignments. Specific topics to be explored will include, but are not limited to:

- overview and plan an AP® English Literature course,
- explore and utilize AP® Central,
- examine English Literature and Composition Exam Questions 1-3,
- view, grade and discuss exam samples and rubrics,
- discuss points of view, structure and literary technique practices,
- discuss novels, plays and activities including reading strategies – *How to Read Literature Like a Professor*,
- discuss prose devices such as syntax, diction, and narrative pace,
- analyze multiple-choice strategies,
- discuss reading and poetry explication methods and activities,
- focus on tone and an array of writing assignments for drama, poetry, and prose, and
- share units, lesson plans, and activities.

What to Bring to the Institute

- laptop computer or tablet with keyboard,
- clothing to accommodate warm and cool classrooms, and
- check to pay for MSU credit (optional). Remember, 30 renewal units are free of charge.

All participants will receive:

- a notebook containing all institute materials,
- a variety of sample texts and resources, and
- a flash drive for downloading electronic copies of materials.

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AP® Statistics *Presenter* Robert Smidt

Bob Smidt (Ph.D. Wyoming, M.S. Rutgers, B.S. Manhattan) is professor emeritus and former chair of the statistics department at Cal Poly, San Luis Obispo, where he was named Distinguished Faculty (a teaching award). He has taught statistics at four colleges, two junior colleges, an air force base, and a prison (a captive audience). He has been a question leader, table leader, and reader for the AP® Statistics exam and has presented more than 50 one-day and week-long workshops to AP® Statistics high school teachers around the country. He has broad statistical consulting experience and has contributed articles to a variety of journals.



Agenda

Objectives

This workshop covers the four major content areas of AP® Statistics: exploratory data analysis, data collection, probability, and statistical inference. It will provide AP® Statistics instructors with insights into the material and will introduce techniques for presenting the ideas with which students struggle the most. Recent exam questions will be analyzed to give instructors a better understanding of the emphasis and expectations found in the course. The workshop layout will be flexible, providing opportunities for discussions of requested topics.

Topics will include the following:

- Investigation of important ideas from the four major content areas:
 - exploratory data analysis,
 - data collection,
 - probability, and
 - statistical inference.
- Consideration of:
 - concepts that are particularly difficult for students,
 - teaching strategies and lecture suggestions, and
 - approaches for taking the AP® Statistics exam.
- Examination of:
 - the content of the 2016 AP® Statistics exam and
 - interesting and pedagogically useful questions from old exams.

Monday, June 27

Morning	Introduction/expectations Survey/introduction of participants AP® Statistics resources Overview How the exam is written and graded The Big Ideas Calculations aren't enough—Communication in AP® Statistics
Afternoon	Topic 1—Exploratory data analysis Summary of important ideas Some exam questions A little bit on graphs Practice grading session: EDA

Tuesday, June 28

Morning	Topic 2—Collecting data
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Summary of important ideas
 Some exam questions

Sampling
 Sampling plans: Non-probability versus probability samples
 Need for randomness experiment
 Literary digest example
 Log legend

Experimental design
 Paper airplanes activity
 Observational study versus design experiment
 Ripple effect
 Basic principles of experimental design
 The scope of inference

Afternoon Practice grading session: Data
 Topic 3—Probability
 Summary of important ideas
 Some exam questions
 Dice and coins
 Expected values and roulette
 Simulated Lecture 1: Sampling distributions

Wednesday, June 29

Morning Practice grading session: Probability
 Topic 4—Inference
 Summary of important ideas
 Some exam questions
 Confidence intervals
 Simulated Lecture 2: Intro to confidence intervals
 Basics
 Analogies to help explain confidence level
 Correct and incorrect interpretations
 A MINITAB simulation

Afternoon Hypothesis tests
 Simulated Lecture 3: Intro to hypothesis tests
 Basics
 Deck of cards activity
 Power curves
 Simulated Lecture 4: One-tailed tests—guess the instructor’s weight

Thursday, June 30

Morning Practice grading session: Inference
 The Investigative Task

Afternoon Multiple-choice questions
 Preparing for the exam
 Evaluation/farewell

What to Bring to the Institute

- A list of questions and topics for discussion,
- Calculator,
- clothing to accommodate warm and cool classrooms, and
- check to pay for MSU credit (optional). Remember, 30 renewal units are free of charge.

All participants will receive:

- a notebook containing all institute materials,
- a variety of sample texts and resources, and
- a flash drive for downloading electronic copies of materials.