

2010 Syllabus for APSI Physics

July 26 –30, 2010

Institute Overview

During this one-week institute, you will have the opportunity to meet and learn from others who are developing Advanced Placement Physics programs in their schools as you become familiar with the AP Physics program and its changing scope and sequence. You will come away from the institute with many materials, including sample textbooks, the College Board AP Physics packet, a CD with tests and solutions from past years, packages of "make and take" labs and demonstrations, teacher materials and sample course syllabi, and the solutions to the 2010 exams. We will generally spend each morning working on problem solving techniques and discussing approaches to teaching AP Physics—including development of a course syllabus and writing labs and assessments that address higher order thinking skills in students. Afternoons will be spent in the laboratory—building lab and demonstration setups, performing demonstrations, doing lab experiments, developing technological skills, and checking web materials.

Consultant Background

Connie Wells



Connie Wells has a Master of Science Degree in Physics from The University of Kansas and is a Physics and Advanced Placement Physics teacher, as well as Science Olympiad Team Coach, at Pembroke Hill School in Kansas City, Missouri. During the past eighteen years as an A.P. Physics teacher, she has been active in test scoring and development for The College Board, serving on the AP Physics Test Development Committee from 1997-2001. Since 1995, she has served in various roles as Reader, Table Leader and Question Leader for the A.P. Physics Reading. In November 2003, Connie was a Regional Winner of the 2003-04 Siemens Award for Advanced Placement Teaching sponsored by The College Board and The Siemens Foundation. She is the author of AP Physics B, 2nd edition, a companion review guide for Walker's Physics, 4th edition, published by Pearson/Prentice Hall, 2009. She previously authored Kaplan's AP Physics B: A Study Guide, published by Simon and Schuster in 2002 and 2003 and has most recently contributed an article on "Electric Potential and Potential Energy" for the College Board focus booklet on "Electrostatics".

As a workshop leader and College Board institute consultant, she has presented teacher workshops and institutes throughout the country and abroad—including California, Illinois, Missouri, Kansas, Colorado, West Virginia, Michigan, Wisconsin, Iowa, New York, Hawaii, and Saipan. In 2007-2008, she presented College Board AP Physics workshops at the AP Annual Conference in Las Vegas, in Barranquilla, Colombia, in Bangkok, Thailand, and at the American Association of Physics Teachers 2008 Summer Meeting in Edmonton, Alberta.

Connie was appointed by The College Board to the AP Physics Redesign Commission in 2006 and is currently a member of the AP Physics Curriculum Development and Assessment Committee.

Institute Preparation

You will need to bring with you to the AP Physics Institute:

- Scientific calculator
- 2" 3-ring binder
- Lab notebook (if preferred, or maintain a section in your binder)
- Demonstration or "best practices" idea to share (optional)
- Information to prepare a syllabus/timeline for your course or edit an existing syllabus [This might include your school calendar and a listing of chapter headings from the text you will use.]
- TI 84 plus calculator (optional) [We will share these in groups to do interface probe experiments.]

Since textbooks will be provided, you do not need to bring books with you, unless you have a favorite reference you would like to share. However, you may want to bring an empty suitcase! There will be short "homework" assignments each day, but these will be minimal and should allow you plenty of time for evening activities or socialization with other participants.

If you have a particular need or request, please don't hesitate to contact me in advance. Though I have a master plan for each day, I will do my best to "fit" each institute to the individuals attending. I look forward to meeting and working with each of you.

Institute Schedule

Monday, July 26

Morning Session

- Introduction and overview of Institute goals
- Review materials supplied for the institute
- AP course content and plan for preparation of individual course syllabi
- AP Redesign
- Exam Format
- AP Audit

Afternoon Session

- Demonstrations
- Construction of and Experiment with Small Motor Oscillators

Assignment:

- Work #1-3 free response from 2010 AP Physics B Exam and be prepared with questions concerning related concepts [All test copies will be provided.]
- Begin working on latest published Multiple Choice test (due Thursday)
- Begin work on course syllabus (due Friday)

Tuesday, July 27

Morning Session

- Solutions to free response problems #1-3 from 2010 B test and related concepts
- Process of reading and scoring AP exams
- Assigning scores to free response homework (#1-3)
- Using the A.P. scale to assign an A.P. score and course grade
- Score sample student papers from 2010 exam
- Further discussion of multiple choice format and exam preparation

Afternoon Session

- Laboratory Journal
- Demonstrations
- Lab: "Calculator Interfaced Experiments"
- Work with TI interface equipment to design a lab experiment for your classroom use
- Class demonstration of "What's Watt" and construction of demo device
- Construction of "LED and Neon Blinkies"

Assignment:

- Work remaining free response questions from 2010 test and be prepared to discuss concepts
- Continue to work on the latest published Multiple Choice test (due Thursday)
- Work on course syllabus (due Friday)

Wednesday, July 28

Morning Session

- Grade remaining free response problems from the 2010 test and discuss concepts
- Use the A.P. scale to assign an A.P. score and course grade

- Score student samples of these problems
- Take a mock 15-minute multiple choice exam, grade and score it

Afternoon Session

- Demonstrations
- Discussion of background concepts related to capacitors
- Lab: "Charging and Discharging a Capacitor"
- Graph charging and discharging curves using Excel

Assignment:

- Complete the Multiple Choice Exam
- Work on course syllabus

Thursday, July 29

Morning Session

- Score Multiple Choice Exam, answer questions and discuss related concepts
- Discuss testing of laboratory skills on the exam
- Develop a summary of ideas for implementation of a laboratory plan that includes adding new technology to each classroom

Afternoon Session

- Demonstrations
- Lab: "Determination of Laser Wavelength"
- Lab Follow-Up: "Determination of Capacitance from Excel Graphs"
- Discussion of large group data and error analysis
- Discuss teacher resources, including web sites
- Organize materials for "Best Practices" presentations

Assignment:

- Bring in course syllabus for sharing and critique
- Bring in "Best Practices" presentation (optional)

Friday, July 30

- Demonstrations and "Best Practices" by participants
- Workshop evaluation
- Further examination of newly developed resources and curricula from the AP Redesign (as time permits)

Graduate Credit Option

Participants may also earn three graduate education hours for any of the AP Summer Institutes from Washburn University for a reduced tuition and the successful completion of an academic assignment.

Additional Information

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