

# 2013 AP Physics Summer Institute Tentative Syllabus

## July 22 – 25, 2013

### Institute Overview

During this 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 2013 B and C 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, designing and evaluating laboratory experiments, developing technological skills, and checking web materials. Since your consultant has been involved since 2006 in the design of the new AP Physics 1 and Physics 2 courses, you will have the opportunity to ask your questions and to discuss the new courses and the options for course sequencing and course planning.

### Consultant Background

Connie Wells has a Master of Science Degree in Physics from The University of Kansas and is a Physics and A.P. Physics B and C teacher at Pembroke Hill School in Kansas City, Missouri. An A.P. Physics teacher since 1991, she has been active in test scoring and development for The College Board, serving on the AP Physics Test Development Committee from 1997-2001. From 1995 to 2006, she 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. As a workshop leader and College Board institute consultant, she has presented teacher training institutes throughout the United States and abroad—including Hawaii, Saipan (Northern Marianas Islands), Barranquilla (Colombia), Bangkok, Skopje (Macedonia), Shanghai, and Tokyo. She is the author of several Physics and A.P. Physics review guides and is currently Chair of the Committee on Teacher Preparation for the American Association of Physics Teachers. Appointed by The College Board to the AP Physics Redesign Commission in 2006, Connie is currently Co-Chair of the AP Physics 2 Curriculum Development and Assessment Committee.

### Contact Information

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## **Schedule**

### **Day 1**

- Introduction and overview of institute goals
- Review materials supplied for the institute
- AP course content and plan for preparation of individual course syllabi
- Current exam format
- Introduction to new AP Physics 1 and Physics 2 courses
- Demonstrations
- Construction of and experiments with small motor oscillators

#### *Assignment:*

- Work #1-3 free response from 2013 AP Physics Exam\* and be prepared with questions concerning related concepts. [All test copies will be provided.]
- Begin working on 2009 published multiple choice exam
- Begin work on course syllabus

### **Day 2**

- Solutions to free response problems #1-3 from 2013 exam and discussion of 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 2013 exam
- Further discussion of multiple choice format and exam preparation
- Laboratory journal/student lab records
- Demonstrations
- Design a lab experiment, using the student lab inquiry model
- Class demonstration of "What's Watt" and construction of demo device
- Construction of "LED and Neon Blinkies"

#### *Assignment:*

- Work remaining free response questions from 2013 exam and be prepared to discuss concepts
- Continue to work on the 2009 published multiple choice exam
- Work on course syllabus

### **Day 3**

- Grade remaining free response problems from the 2013 exam 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
- Demonstrations
- Discussion of background concepts related to capacitors
- Lab: "Charging and Discharging a Capacitor"
- Graph charging and discharging curves using Excel
- Laboratory design #2

#### *Assignments:*

- Complete the multiple choice exam and laboratory journal
- Work on course syllabus
- Bring in "Best Practice" (optional for noncredit participants)

## **Day 4**

- Score 2009 multiple choice exam, answer questions, discuss related concepts, and compare AP Physics B and C exams
- Discuss testing of laboratory skills on the exam and development of scoring rubric
- Develop a summary of ideas for implementation of a laboratory plan that includes adding new technology and incorporating student-led laboratory design
  - "Best Practice" presentations by participants
- Laboratory notebook and syllabus due from credit participants
- Workshop evaluation

*\*Teachers who are preparing exclusively for AP Physics C Mechanics, Electricity and Magnetism, or a course that is a combination of both have the option of doing the C exam questions instead of B exam questions as assigned work. We will discuss questions for all three exams during the week and will specify differences between Physics B and Physics C for those teachers (or students) preparing for more than one exam.*

## **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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