

2021 Advanced Placement® Physics 1

About the AP® Physics 1 Summer Institute

This five-day AP Physics 1 summer institute is to provide an opportunity for high school physics teachers to familiarize themselves with the AP Physics 1 course, and to meet and share ideas with others who are developing or teaching AP Physics 1. Topics will include Physics 1 course description and updates, close look at the recent years' exam questions, inquiry-based and remote learning instructional strategies, syllabus development and course audit, lab/project requirements and ideas, and teaching resources. Participants are expected to take active roles in the institute, familiarize themselves with the AP Physics 1 curriculum and requirements, answer sample exam questions and examine sample student answers, share inquiry-based and remote teaching strategies.

Objectives:

1. Familiarize with AP Physics 1 curricula & exam requirements
2. Review AP Physics 1 topics as desired
3. Close look at the recent AP Physics 1 Exam questions and student performances
4. Share best practice ideas of inquiry-based instructions and remote learning; and
5. Develop/share activities that help student development of qualitative and quantitative reasoning skills.

Tentative Daily Schedule:

Class meets online Monday through Friday noon, June 14-18, 2021. All participants are encouraged to work independently as well as by groups.

Day	Morning 1	Morning 2	Afternoon 1	Afternoon 2 (Evening HW)
Mon	<ul style="list-style-type: none"> • Introduction of participants • Overview of AP P1 course and exam: The CED binder - Science practices, the course content, Course at a glance, A walk through the first unit. 	<ul style="list-style-type: none"> • The CED binder: exam information, what's assessed and how, task verbs, information & equation sheets, lab experiments, lab report • Resources for teaching P1: The CED binder - textbooks, pacing guide (CED unit guides). 	<ul style="list-style-type: none"> • sample MCQ and FRC questions • The CED binder – instructional strategies, • Resources for teaching P1: AP Central and CB's upcoming resources. 	<ul style="list-style-type: none"> • Syllabus and course audit • A recent P1 practice exam MCQ: sort out by unit of topics <p>HW: Answer the P1 MCQ's of units 1, 2, 4, 5</p>
Tue	<ul style="list-style-type: none"> • Discussion of last night's homework • Discussion: Strategies of teaching units 1, 2, 4, 5 	<ul style="list-style-type: none"> • 2019 P1 exam FRQ : units 3, 7 sample student answers • 2017 P1 exam MCQ's units 3, 7 • Discussion: Strategies of teaching units 3, 7 	<ul style="list-style-type: none"> • Develop a curriculum for selected unit (1-5, 7), 	<ul style="list-style-type: none"> • Sharing: labs, demos, & activities on units 1-5, 7 <p>HW: design a lab or demo for tomorrow</p>
Wed	<ul style="list-style-type: none"> • 2019 P1 FRQ units 8&9, sample student answers • 2017 P1 MCQ units 8&9 	<ul style="list-style-type: none"> • Discussion of last night's homework • Discussion: Strategies of teaching units 8&9 	<ul style="list-style-type: none"> • Sharing: labs, demos, and activities of units 8-9 • Inquiry-based lab tryout, units 1-5, 8-9 	<ul style="list-style-type: none"> • Inquiry-based lab tryouts units 1-5, 8&9 (cont.) <p>• HW: design a lab or demo for tomorrow.</p>

Thu	<ul style="list-style-type: none"> • 2019 P1 FRQ units 6 and 10, sample student answers • 2017 P1 MCQ units 6 and 10 	<ul style="list-style-type: none"> • Discussion: Strategies of teaching oscillation and wave • Discussion of last night's homework 	<ul style="list-style-type: none"> • Develop a curriculum for selected unit (6, 8-9, 10), 	<ul style="list-style-type: none"> • Discussion: Strategies for teaching scientific argumentation and writing • Lab tryout units 6 and 10 <p>HW: Lab write-up of one lab</p>
Fri	<ul style="list-style-type: none"> • Discussion: CB Equity and Access statement and discussion Workshop • Presentation: curriculum and lab 	<ul style="list-style-type: none"> • Presentation: curriculum and lab • Workshop Evaluation • Farewell 		

Evaluation: Evaluation will be based on each individual's (1) participation in the class discussions and activities, and (2) performance in individual presentations. The grading criteria and scales are as follows:

Discussion/Class Activities:	5	Demonstrated leadership
	4	Active participation
	3	Passive participation
	2	Borderline participation
	1	No participation
Presentation:	5	Presentation is innovative in information, set up, and demonstration
	4	Presentation is attention catching in information, set up, and demonstration
	3	Presentation is plain in information, set up, or demonstration
	2	Presentation has flaws in information, set up, or demonstration
	1	No presentation

Final Grade: Final grade is calculated by the following percentages and scale:

Professional Development	
Discussion	50%
Class Activity	50%

What to bring:

Items you should have access to during the week include:

- A laptop computer/ tablet
- A scientific/engineering calculator.
- Stable and reliable internet connection
- College Board AP Physics 1 Workshop Handbook, to be provided by the Institute.
- Participants' own copies of algebra/trig-based college introductory physics textbook. This is preferred, but not required.
- Instructor's handouts.

Instructor:

Jiang Yu, Ph.D., is a professor of physics at Fitchburg State University in Massachusetts. Jiang's involvement with the AP Physics programs began in 1997 when she first led a College Board authorized AP Physics Summer Institute for high school teachers at her home university. Since then, she has led many AP Physics workshops and institutes in the United States and abroad. Jiang has participated in the AP Physics exam grading since 2000 and has served various leadership roles, including the Chief Reader from 2009 to 2013 and a Chief Reader Associate from 2013 to 2017, for which she worked with the AP Physics Exam Development Committees, set the grading rubric standards, and led the Reading operations. Currently, Jiang also serves as a senior reviewer and curriculum adviser for the College Board AP Physics course audit program.