

ROBERT S. WELCH CENTER FOR GRADUATE AND PROFESSIONAL STUDIES
GOUCHER COLLEGE
ADVANCED PLACEMENT SUMMER INSTITUTE – IN PERSON
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SYLLABUS

AP 594.200 Preparing Students for AP Physics 2: Algebra-Based

Week 2 (June 28-July 1, 2021)

Monday - Thursday 7:30 a.m. - 4:00 p.m.

Text: AP Professional Development for Physics Handbook, AP Physics 2 Course & Exam Description

Instructor Joe Mancino, email - mistermancino@gmail.com

Preparing Students for Advanced Placement® Physics 2

This AP Physics institute is designed to help teachers build a foundation for a successful AP Physics program. We will focus on teaching the AP Physics 2 course that began in the 2014/2015 school year and preparing students for the test. The first goal involves using the Course and Exam Description which pairs essential knowledge with the fundamental scientific reasoning skills necessary for scientific inquiry. The CED provides detailed information concerning what a student should know and what they are expected to do on the AP Physics 2 Exam. A significant amount of time will be spent considering how the new course does not just change what we teach but also changes how we teach. Other focus areas of this course include preparing a new syllabus for AP Physics 2 and organizing the inquiry laboratory experiments/questions that comprise 25% of the time to be spent in the new course. Special topics related to the revamped course —pV diagrams and probability, entropy, electrical circuits with capacitors at steady state and topics in Modern Physics—will be addressed as well. Copies of the AP Physics 2 CED will be provided in the AP Physics Participants handbook. Copies of the CED also may be downloaded from the College Board website prior to the course. Participants are invited to bring their laptop, tablet, or smartphone along with their best activities, lessons, or labs to share with the group.

In this course participants will

1. Become familiar with the AP Physics 2: Algebra-Based curriculum standards and develop a course syllabus that reflects these new standards.
2. Adapt in-class questioning styles to match the style of the AP exam.
3. Construct AP level multiple choice questions and problems.
4. Get hands-on experience with a variety of laboratories.
5. Modify their existing lab program to reflect the new emphasis on a more open-ended, inquiry-based approach.
6. Network with other teachers and share “best practice” lessons.

Daily Agenda

Day 1

- AM1 Introductions and Agenda
What makes AP 2 different?
Introducing the MC test
- AM2 Interpreting the Curriculum Framework
- PM1 Anatomy of the AP Reading
Paragraph Length Response FRQ's
Introduction to AP Classroom
- PM2 Labs about Fluids
Lab Presentations

Day 2

- AM1 Using questioning techniques that generate conversation
- AM2 Equity and Access
Using "AP Potential"
Success Strategies
Recruitment
- PM1 Lab Based FRQ's
Curriculum Workshop
- PM2 Hands-on Lab Time with Electrostatics

Day 3

- AM1 Pacing a Class
The AP Audit
- AM2 Direct Measurement Videos, PhET, and other virtual resources
Curriculum Workshop
- PM1 TIPERS and sensemaking tasks
- PM2 Optics Labs

Day 4

- AP 1 Best Practices and AP Curriculum Presentations
- AM2 Best Practices and AP Curriculum Presentations
- PM1 The Qualitative / Quantitative Question and Science Writing
- PM2 Magnetism / Induction Labs

Homework

After days 1-3, we will answer a series of test questions about a subset of topics and devise a list of skills and knowledge students will need in order to be successful with those questions. Every teacher will solve all the MC questions while only one group will present about FRQ solutions.

There will be additional and completely optional "office hours" during which we will work on the

homework questions as a group. This time is ideal for questions about content. Typically, these informal sessions offer experienced teachers and new teachers a great way to learn from one another.

This will NOT be a burdensome time investment, yet it will expose teachers to a wide range of question types and topics on the new exam. We will generate a list of activities and lab experiences that will help students generate that knowledge and develop those skills.

College Board AP Teacher Standards

Content Knowledge
Teacher Certification
Pedagogy and Student Learning
Analysis and Reflection
Ongoing Professional Development

Graduate Programs in Education (GPE) Outcomes/Standards

Knowledge Standards

- Apply knowledge of the philosophy related to the area of specialization or certification.
- Demonstrate understanding and the use of assessments appropriate to the area of specialization or certification.
- Demonstrate the knowledge of the concepts of diversity applied to the area of specialization or certification.

Skills Standards

- Use problem solving/critical thinking strategies appropriate to the area of specialization.
- Use reflective practice within the area of specialization.
- Demonstrate effective communication and presentation skills related to the area of specialization.
- Use a variety of technologies appropriate for working in the area of specialization.

Disposition Standards

- Demonstrate positive dispositions toward diversity and equity.
- Demonstrate professionalism in one's demeanor, behavior, conduct, decision-making, and interaction with colleagues.

Grading and Transcript Information

Goucher College does not issue grade reports. You can obtain your grade approximately 3 weeks after concluding the course by going to the myGoucher website (myGoucher) and following the prompts to receive your grade. If you have misplaced your password, please contact the help desk (helpdesk@goucher.edu) and they will help you through this procedure.

If you need a paper copy of grades for tuition reimbursement, you will need to request a transcript in writing. You can fax your request to 410-337-6504 or mail to:

Goucher College
Registrar's Office
1021 Dulaney Valley Road
Baltimore, MD 21204

There is no charge for this request. Please allow 3-5 working days to process. To access the transcript request form, please go to [Transcript-Request.pdf \(goucher.edu\)](#).

Questions? Please call the Welch Center Office at 410-337-6200.

Requirements for Graduate Credit:

Before August 1st, prepare a timeline for your AP Physics 2 course, and email it to me.

Your timeline should include approximate dates for every topic in the course.

In addition, include a list of every activity and lab your students will be doing along with a brief description of what they students will be doing and why they will be doing it.

Examples: **Archimedes and Buoyancy**

Using only a spring scale and a cup of water, determine the density of an object.

Diffraction Lab

Determine the wavelength of a laser using a diffraction grating.

Graph the relationship between slit spacing and “x” for several objects.

This timeline can form the basis of your AP audit for AP Physics 2.