



## AP Physics 2 Syllabus 2024

Instructor: Angie L. Culberson-Espinosa  
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Email:

Room: 402  
Conference Period: 1st Block  
Tutoring: Tue & Thur 4:15-4:45 PM

**Course Description:** This is a 2<sup>nd</sup> year physics AP course and will include the topics of fluid mechanics, thermal physics, electricity, optics, atomic & nuclear physics, and modern physics.

**Course Information:** This is an algebra-based course and use of math is required. The student must have pencils or pens, a scientific calculator, and lab notebook. Students have the opportunity to meet the learning objectives in a variety of ways and to apply their knowledge to real world experiences and societal issues. Instructional time involves a variety of student-centered activities. Students have the opportunity to work cooperatively to solve challenging problems and to present their solutions to the class. Throughout the year connections to the world are explored in discussions, group projects, and class demonstrations. Laboratory work, described below, offers frequent opportunities to work cooperatively, explore ideas, and present information. Outside of class students read the assigned text and complete homework assignments that support and reinforce each lesson as well as what has been learned in the laboratory setting. Unit exams take place at the end of each block of instruction. Students also attend tutorial sessions where they can receive individual assistance from the instructor and work with their peers.

Students spend 25% of the instructional time engaged in laboratory work. Experiments designed by the instructor are used to demonstrate procedural guidelines and to learn how to use specific laboratory equipment. The majority of labs are inquiry-based where students are given an objective and a set of materials. They are tasked with designing a procedure and collecting data to determine specific quantities, determine the relationship between variables, and/or to derive fundamental physics equations. Laboratory design, experimentation, data gathering, data presentation, analysis, drawing conclusions, and experimental error analysis are elements in these lab activities.

Laboratory work is recorded in a laboratory notebook, and students will have opportunities to present their laboratory work to their peers. All aspects of the laboratory work including any pre-lab work, question/hypothesis, experimental procedure, data, analysis, graphs, conclusion, and error analysis will be recorded. Additional information as indicated in the following pages will also be included in the lab notebook. At the end of completing the lab work for the investigations that are labeled “Guided- Inquiry,” the students will present their method, data and conclusions on whiteboards. The class will then engage in peer critique of each group’s results, and discuss strategies

**Textbook and Resources:** Physics 5<sup>th</sup> Edition textbook, teacher-made, Serway & Faughn and LTF Labs, science/technology-based videos and documentaries, internet, scientific periodicals, newspapers, and other relevant media.

**Instructional Procedures and Support:** The teacher will be available for tutoring in the morning. It is the student’s responsibility to ask for help when needed and for making the required transportation arrangements. Retesting will be available in accordance with SISD High School Grading Policies.

**Classroom Management Procedures:** District Policy Will Be Enforced!

### Classroom Expectations:

As per district policy major exams/assignments will account for 60% of the student's grade. Quizzes and home/class work will account for the remaining 40%.

### Statement for Academic Dishonesty

Academic integrity is fundamental to the activities and principles of our school. No student shall cheat or copy the work of another. Plagiarism, the use of another person's original ideas or writing as one's own without giving credit to the true author, will be considered cheating, and the student will be subject to academic discipline that may include loss of credit for the work in question.

### Course Schedule:

Week	Topic(s)	Required Reading
Week 1	Review Week: Algebra/Trigonometry, Equation Solving, Scales and Newton's biggest hits (review of important Physics 1 topics)	Ch. 1-2, 5-6
Week 2	Density & Pressure, Buoyancy, Fluid flow continuity, and Bernoulli's equation	Ch. 15
Week 3	Temperature & Heat, Kinetic Theory	Ch. 16, 17
Week 4	Thermodynamic Processes	Ch.18
Week 5	Laws of Thermodynamics	Ch.18
Week 6	Electrostatics, Electric Potential & Capacitors	Ch.19, 20
Week 7	Electric Current, and DC Circuits	Ch. 21
Week 8	Magnetostatics and Electromagnetism	Ch. 22, 23
Week 9	Review for Semester Exam	Ch. 15-23
Week 10	Geometric Optics	Ch. 26, 27
Week 11	Physical Optics	Ch. 28
Week 12	Atomic Physics	Ch. 31
Week 13	Quantum Physics	Ch. 30
Week 14	Nuclear Physics	Ch. 31, 32
Week 15	Review for AP Exam	Ch. 15-23, 26-28, 30-32
Week 16	Individual Projects/Presentations	

\*Be sure to get an electronic copy of Open Stax College textbook as well