

321433 Physics A (10, 11, 12)

1 Year, 1 Unit

Prerequisites: C or better in both semesters of Algebra I, credit or enrollment in Algebra II. (Recommended for the college-bound student or for those considering a technical career).

Physics is the most fundamental science and an important foundation course for many career paths, including engineering, computer science, architecture, and medicine. Physicists attempt to answer questions of great diversity: Why is the sky blue? What happens to an astronaut traveling at the speed of light? These topics will be covered (time permitting): motion, force, waves, gravitation, rotation, momentum, energy, special relativity, electricity, magnetism, light, optics, and sound. We will work for a conceptual understanding of physics along with a mathematical justification. This means you will have to think in this class. Physics students should have a solid background in algebra, as it will be used regularly. Work outside of the classroom, reading, problem solving, or doing independent research will be required. Significant class time will be spent in hands-on labs involving computer- and calculator-based lab equipment.

*More info at <http://fayar.net/east/teacher.web/science/reif/StanPhys.html>*

322531 AP Physics B (10, 11, 12)

1 Year, 1 Unit

Prerequisites: B or better in both semesters of Algebra II, credit or enrollment in Trigonometry/Introductory Analysis, credit for Physics, or permission of the instructor.

A college-level physics course incorporating algebra, trigonometry, and vectors. This course is designed for serious, self-motivated, successful science and math students seeking a challenge with the reward of possible college credit. Topics covered will include: motion, force, energy, momentum, circular motion, oscillations, gravitation, heat, fluids, thermodynamics, electricity, magnetism, waves (including sound), optics, modern physics, atomic physics, and nuclear physics. Prospective APPB students should note that the length of this list means the pace will be fast. Lab time during class will be shorter in this class due to time restrictions, but students will have the freedom to design their own labs in some cases. All students should expect to come to AP exam review sessions outside of class time in the spring semester. A grade of "3" or better on the AP exam will result in credit for "College Physics" at many colleges and universities (up to 8 semester hours of credit). This credit will only count as an elective for students majoring in engineering or physical science at many universities; students planning scientific or technical careers should consider taking AP Physics C.

*More info at <http://fayar.net/east/teacher.web/science/reif/appb/APPB.html>*

321611 AP Physics C (10, 11, 12)

1 Year, 1 Unit

Prerequisites: Credit in Trigonometry/Introductory Analysis, credit or enrollment in a calculus course, credit for a physics course, or permission of the instructor.

This course is intended for students who truly enjoy math and science and are good at both. In other words, this is a course intended for students planning scientific or engineering careers. AP credit in this course is accepted for physical science and engineering majors at most universities. We will cover only motion, force, energy, momentum, oscillations, gravitation,

electricity, and magnetism, but in greater depth and with more mathematical sophistication than our other physics courses. Calculus will be applied throughout the course. A grade of "4" or better on the AP Exam will result in credit for what is termed "University Physics" or "Physics for Engineering Students" at many universities (up to 10 semester hours of credit). At the end of the course, students may choose to take an APPC Mechanics test, an APPC Electricity and Magnetism test, or both. This course (as taught at FHS) usually concentrates on Mechanics, with the result that a high proportion of students earn a "qualified" score on the AP exam (3, 4, 5). It is possible that we would cover Electricity and Magnetism, as well. See the instructor for details. In APPC, student-designed labs will make up the majority of the labs. Students should be prepared to apply calculator- and computer-based technology to their lab analysis (no prior knowledge expected).

*More info at <http://fayar.net/east/teacher.web/science/reif/appc/APPC.html>*