

HCCS Physics Program

This document is to describe the advanced physics courses that are offered at HCCS:

- AP Physics 1
- AP Physics 2
- AP Physics C

AP Physics 1

The AP Physics 1 program is a two-hour accelerated physics course. The objective of this course is to teach students advanced high school physics and help them prepare for the AP Physics 1 exam. The target students are those who are at least 13 or in grade 8. Students are not expected to have prior physics background. After taking this course, they can go to their high school to register for the AP Physics 1 exam. They can continue their physics study at HCCS by taking AP Physics 2, AP Physics C, or pursue other subjects to study at their high school. The student must be self-motivated, have a strong math background, and have a strong interest in learning physics.

Age requirement: At least 13 years old or in grade 8

Limit of enrollments: 20

2016-2017 school year teaching staff: Dr. Kexin Zhang

AP Physics 2

The AP Physics 2 program is a two-hour accelerated physics course. The objective of this course is to teach students advanced high school physics and help prepare them for the AP Physics 2 exam. The target students are those who are at least 14 or in grade 9. Students are expected to have taken AP Physics 1 at HCCS or a similar course elsewhere. After taking this course, they can go to their high school to register for the AP Physics 2 exam. They can continue their physics study at HCCS by taking AP Physics C, or pursue other subjects to study at their high school. The student must be self-motivated, have a strong math background and have a strong interest in learning physics.

Age requirement: At least 14 years old or in grade 9

Limit of enrollments: 20

2016-2017 school year teaching staff: Dr. Guowei Zhang

AP Physics C

The AP Physics C program is a two-hour accelerated physics course. The objective of this course is to teach students advanced high school physics and help them prepare for the AP Physics C exams (Mechanics and Electricity and Magnetism). The target students are those who are at least 14 or in grade 9. Students are expected to have physics background at the level of AP Physics 1 and 2 with basic knowledge of calculus. This course offers students unique opportunities to enhance their problem-solving techniques in preparation for AP Physics C exams, SAT Physics exam, or $F=ma$ contest. The student must be self-motivated and have a strong interest in learning physics.

Age requirement: At least 14 years old or in grade 9

Limit of enrollments: 20

2016-2017 school year teaching staff: Kevin Huang and Dr. Guowei Zhang:

Teaching: Kevin Huang

Class Supervision: Dr. Guowei Zhang

Road Map

Here is a typical road map for students who participate in the HCCS Physics Program:

Grades \\Month	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
8-10	AP Physics 1								AP 1 Exam
9-11	AP Physics 2								AP 2 Exam
9-12	AP Physics C				F=ma Contest				AP Physics C Mechanics AP Physics C E&M Exams

Teaching Staff

Dr. Guowei Zhang, Teacher, obtained his bachelor's degree in Physics from Peking University and PhD degree from the University of Ottawa. Dr. Zhang has been working as a medical physicist since 2003 in Radiation Oncology at the University of Maryland Medical Center and Georgetown University Hospital. He has taught physics as a full-time staff member for four years at high school level, five years at undergraduate and graduate levels, and has been a physics laboratory instructor for five years in Canada on a part-time basis. He has kept tutoring activities with high school students for many years.

Dr. Kexin Zhang, Teacher, earned her PhD degree in Physics from the Stevens Institute of Technology in 2007. Dr. Zhang has been working for NOAA contracting companies as a research scientist since 2006. She had taught fundamental physics to undergraduate students for 3 years as a teaching assistant. She got trained in educational psychology and the development of instructional plan from her undergraduate studies. Her teaching philosophy is to promote student involvement and participation in the teaching and learning process.

Kevin Huang, Teaching Assistant, is currently a senior at Centennial High School and visiting research student at Johns Hopkins University. He has self-studied physics since 8th grade, passing both AP Physics C exams with 5 and SAT Physics with 800. He has competed in the U.S. Physics Olympiad where he placed as a Silver Medalist, which ranks him in the top 100 physics students in the nation. Through his research in quantum computation at the University of Maryland, Baltimore County, Kevin is a Grand Prize Winner at the Baltimore Science Fair and an Intel ISEF finalist.