Physics First – is it the right class for your incoming freshman?

Questions and answers with teachers Tom Vining and Ryan Hill about DMHS's freshmen physics program

What is Physics First?
It is a conceptually based introductory physics class that incorporates basic algebra and shows students how to apply science and mathematics in the real world. This class challenges students about the hows, whys and what ifs of their world. Physics First is a lab-oriented program where students will explore the concepts involved through hands on experiments and engineering projects.

Physics! Isn't that the hardest of all of the sciences?
Physics is commonly thought of as a very difficult, upper division science. However, physics is the most fundamental of all the sciences, which teaches concepts that can be applied throughout a student's high school and college career. While students of all levels find the class challenging, they also find the class to be fun, exciting and applicable to their daily lives. Physics First is taught at a level that is appropriate for the learning abilities of ninth grade students, and challenges them to grow in their abilities to think and reason.

Why are we offering Physics First at DMHS?
Arizona is implementing the science AIMS test for sophomores that has four strands, two of these strands are directly addressed by the Physics First curriculum and the other two are directly addressed by the Biology curriculum. Offering this course to freshmen will give them an advantage on the AIMS exam by giving students more experience with the inquiry method of learning and the processes of science as well as better prepare them for future upper division and AP science classes.

Why should my child take Physics First?
Physics is the most basic of all of the sciences. A background in physics can be beneficial in approaching concepts discussed in chemistry and biology courses. By taking this class your child will develop strong problem solving skills, both conceptually and mathematically, that will lead to better understanding in their future science classes. We have also found that by taking Physics First students learn that science can be enjoyable and it sparks a renewed interest in learning science.

Who should be taking Physics First?
All freshmen that are enrolled in Algebra 1 or higher. Honors Physics First is available to students who are in the honors math program and to those who took Algebra 1 in 8th grade and earned a grade of an A.

What science class should they take after Physics First?
In order to be competitive for both the university and real life, we suggest that students take four sciences in high school that should include Biology, Chemistry and then an Advanced Placement or dual enrollment higher-level science.

What do current Physics First students have to say about the class?
When asked for their opinion on the Physics First class, the response of current students is overwhelmingly positive. The quotes that follow are a representative sample of what current students had to say about the Physics First program.

"Every physics first student I have spoken to has admitted that they now always think about physics outside of school."

"I learned a lot and actually see physics everywhere I go now."

"This class had done nothing but make connections."

Prepared by DMHS, Jan. 2009

“When I first came to Physics, I felt that it was going to be a terrible year. After the first few weeks I knew it was going to be a great year.”

“The class corresponds almost directly with the things we were learning in math at the time as a freshman.”

“If kids coming into high school don’t take this class, they are missing out on a whole year of fun.”

“It gives freshmen an opportunity to take a genuinely challenging, but still fun and enjoyable class.”

“The practical applications of physics are visible to me every day. Physics teaches us not only how things work, but why things work.”

“This is what I enjoy most: The feeling of conquering something that at one point you found challenging.”

“I am glad to have this class, especially in my first year of high school, because it helps in other classes, such as math and future years in science classes.”

“At the beginning of the year I was shy and afraid of the class. I saw formulas on the wall and thought I was in WAY over my head. This class has turned out to be one of, if not my favorite class.”

“In the beginning of the year I was really worried. As the year progressed, I got more used to it and it made it easier to understand.”

Why should you take physics?
by Carl Covatto, Ph.D.
Physics General Studies Program Director
ASU Department of Physics

The science of physics encompasses all natural phenomena and is the basis for all other sciences. If you are at all curious about the world around you and how it all works, then physics is for you. Physics is used in a wide variety of fields: acoustics, architecture, engineering, materials science, and medicine. In addition to studying problems related to the fundamental nature of the universe, physicists have also studied problems related to traffic flow, financial markets, renewable energy sources, and many other problems related to daily life.

Should a person who believes "I am not a science person" take physics? Yes, they should. The modern world relies heavily on technology. The news often contains stories on results of medical studies, global warming and new discoveries made by the Hubble Space Telescope. Sometimes these stories present results that are at odds to results previously announced. Which story should you believe? Completing a course in physics will give you an introduction to basic physical principles that can be applied to everyday phenomena. You will also learn critical thinking and problem solving skills that that will be useful in your particular field of study, whatever it may be, and in your daily life.

You do not need to be a poet to appreciate poetry, nor do you have to be a physicist to appreciate the science of physics. Studying a subject gives you a deeper appreciation for its methods and an understanding of the principles on which it is based. Being a student of physics can only deepen your appreciation of nature.