Reasons Students Should be Required to Take Physics in High School

1. Students don't always realize that they will enjoy physics.

"The largest fraction (of female university physics students) became interested in physics careers during high school, and many of these students had diverse interests at the beginning of high school that did not always include the sciences." - Hazari et al 2017

2. Exposing female students to female role models inoculates them from issues related to self-confidence in STEM fields.

The research of Stout et al demonstrates the significant opportunity afforded to high schools willing to connect female students with mentors, high performing peers, and female scientists. It is likely that similar results occur for all underrepresented groups.

3. Universities report that students who took high school physics earn a letter grade higher in any college science course than students who did not take physics in high school.

This article highlights the connection between high school physics and university physics grades. It also demonstrates the importance of high school calculus for all university science students.

This article discusses gender and racial discrepancies related to high school course work. The authors found that math and physics courses in high school contribute to successful completion of an undergraduate degree in a STEM field.

Documented preparation gaps among university physics students

4. Students who take high school physics are more likely to complete a bachelor's degree, regardless of major.

40% of students who take high school physics complete a bachelor's degree. 20% of students who take high school chemistry complete a bachelor's degree. (Susan White and Paul Collette 2011)

The Pennsylvania Department of Education evaluated the impact of high school STEM courses on postsecondary course work and found that students who completed 9 or more rigorous STEM courses during high school were more likely to complete their bachelor's program within four years.

"These findings indicate a significant effect of advanced STEM course-taking for students in the presently studied cohorts from PA high schools, even after controlling for other significant explanatory variables. The odds of on-time graduation from high school, postsecondary enrollment, persisting to year two and three, remaining at the same college,

graduating within four years of high school completion, and graduating with a Bachelor's degree increases with each additional advanced STEM course taken."

5. 24/25 of the highest paying college majors will require university physics courses

Not all bachelor degrees have the same earning power. The majority of degrees with greatest earning power require students to take physics courses.

6. The equity concerns in the physics and engineering community are many! All students should have the opportunity to explore physics and enter a university setting prepared.

APS STEP UP program focuses on supporting female students

The National Science Board published PhD racial gaps in all fields. All fields have work to do. The most successful way to close this gap on a high school level is enrolling students in physics by default and requiring a waiver for students who opt-out.

*A different strategy that has been successful in a Florida school district