

## Should all students take physics?

In an attempt to improve science literacy, some high schools have started requiring all students to take physics.

Boosters say physics should no longer be seen as the hard-to-grasp province of math whizzes, but should be taught to everyone because it's key to developing analytical skills and a true understanding of chemistry and biology. Indeed, a state committee of academic and business leaders is pushing to require students to take a physics course as part of the core curriculum.



PETER MONSEES / THE RECORD

Pressure to beef up science education comes from American students' failure to keep up with their peers abroad, and employers' complaints that they can't hire workers with such poor problem-solving skills.

American 12th-graders performed below the international average for 21 countries on a test of general knowledge of math and science, according to the respected Trends in International Math and Science Study.

▲ Bob Goodman teaching his physics class at Bergen County Technical High School in Teterboro, where physics is a required subject.

That lag starts early: Fewer than one-third of fourth-graders and eighth-graders scored at or above the level deemed proficient in math.

Should students be required to pass a physics course to get a high school diploma?

PRO:

Schools such as Ridgewood High School and the Bergen County Technical High School in Teterboro now require physics. They say it can be taught in hands-on ways that make it accessible to students who see themselves as weak in science.

"Physics is not the most advanced science, it's the most fundamental science, and it underlies biology and chemistry," said Edward Nartowitz, head of the science department at Ridgewood High School. "If you don't understand what energy is, how can you understand what chemistry is trying to talk about?"

Dana Egreczky represents the New Jersey Chamber of Commerce on the state's High School Redesign Steering Committee, which is aiming to match diploma requirements with the new demands of college and the workplace. She reels off three reasons to require physics: Educators' extensive research supports physics for all to enhance analytical skills, young Americans need it to be competitive with students abroad, and the increasingly high-tech economy demands it.

"Educators tend to look at this as dictates," Egreczky said. "To us this is responding to your customer. We're the business community and we're telling educators that if they don't produce kids with these skills we won't be able to hire them."

CON:

Cliffside Park High School, guidance counselor Edward Meier blanches at the thought of forcing all students to take a physics course. They're already juggling a slew of mandates. Like many high schools, Cliffside Park recently boosted the science requirement to three courses, up from two.

"The curriculum is so packed it would be very difficult to require physics for every student," Meier said. "Clearly many students would benefit, but to require it of all students would be a mistake."

Students who failed a required physics course and had to retake it would have even less flexibility in their schedules, and might lose opportunities to pursue electives that appeal to them more, and that might inspire career paths. Stumbling in physics might leave them discouraged.

"When we require a course, it doesn't necessarily help the students," Meier added. "You can bring them to water, but you can't make them drink."