

Advice for Freshmen Coming to Study Physics at Sac State

While still in high school:

- **Take your math seriously** – Perhaps the most important skill for you to gain before you get to college is well-developed Algebra skills. We use it so much that we don't have the time to re-teach it when you get here. Very few students make it in physics if they are not ready to take pre-Calculus or higher once they arrive at Sac State. Having completed pre-calculus or trigonometry in high school is almost essential.
- **Be comfortable with technology** – Make sure you can use word processors and spreadsheet software efficiently. You'll use both a lot in college (not just in physics classes).

When you get to Sac State, please keep the following things in mind as you start your studies (most of this applies to any student regardless of their major):

- **Be realistic about time** – Being a full-time student is a full-time job. For every hour in class, you should be spending *at least* 2 hours outside of class studying. For a typical fifteen unit load, this means that you should be spending over 30 hours a week studying outside of class. If you must work more than 15 hours a week, select your schedule wisely so that you're not overcommitted.
- **Take your math seriously** – The first mathematics course that we require is significantly beyond the minimum University GE requirement. Students who struggle through the calculus series are more likely to struggle in their physics courses. Math (calculus and algebra) is the language of physics; you need to know it thoroughly.
- **Practice, practice, practice** – You will never learn to speak a foreign language without speaking it. Physics is no different. To succeed, you must do problems, lots of them – then do some more. Don't take short cuts using solutions manuals. Don't assume that the algebra that follows the first few steps is trivial; grind them out. If problems are too easy, find harder ones! Challenge yourself!
- **Show up to class** – Physics is hard to learn from books alone. Participate in classroom discussions and don't be afraid to ask questions.
- **Team up** – Studying in groups and working out problems together is a great way to reinforce what you're learning, if done right. Just sitting in a group and copying what others say is unproductive. Explaining problems to others strengthens your own understanding of the subject.
- **Attend the weekly colloquia** – See how the theories that you're learning in classes are applied in the "real world." Pay attention to how the talks are given: what makes them effective, what makes them ineffective? Use them to think about research opportunities.
- **Be comfortable with technology** – Yes, another repeating item. Learn how to effectively use software packages like Microsoft Word and Excel. Learn how to make productive tables and graphs: these skills will make you stand out in your career, no

matter what it is. As you move along further in your studies, use tools like Mathematica and Wolfram Alpha to check your work or solve problems that are impossible with pencil and paper.

- **No surprises!** – While we do our best to keep you informed, ultimately you are responsible for knowing University policies. They can be found in the Catalog: read and understand them. Check your Saclink email (the official email used by the University) frequently for important announcements and updates. By being well-informed, you can avoid issues that may lead to wasted time, extra cost, or unneeded stress.