

Department of Physics
California Polytechnic State University

Our mission

To provide the highest possible educational experience in physics and the physical sciences for

- Students majoring in physics
- Students minoring in astronomy, geology, or physics
- Students taking service courses as a prerequisite for their majors
- Students fulfilling general education requirements

Our goals

1. Students graduating with a B.S. or B.A. in Physics should be able to
 - a. Demonstrate a good understanding of both the theoretical concepts and mathematical techniques of the major fields of physics: classical mechanics, electromagnetism, thermodynamics, and quantum physics.
 - b. Work safely with modern laboratory equipment to carry out measurements and analyze data.
 - c. Use computers to perform numerical computations, to simulate physical phenomena, and to collect and analyze data in the laboratory.
 - d. Communicate effectively, both orally and in writing.
 - e. Move successfully into graduate school or industry.
2. Students minoring in astronomy, geology, or physics should be able to
 - a. Demonstrate an understanding of both the theoretical concepts and mathematical techniques appropriate to their minor.
 - b. Relate the content of the minor to their major field of study.
3. Students taking service courses (PHYS 121-122-123 and PHYS 131/141-132-133) should be able to
 - a. Demonstrate a conceptual understanding of the topics of introductory physics.
 - b. Solve problems in introductory physics.
 - c. Carry out basic science experiments and analyze scientific data.
 - d. Successfully apply physics knowledge in their major fields of study.
4. Students taking General Education courses in physics, astronomy, geology, and physical science should be able to
 - a. Demonstrate a conceptual understanding of the subject matter of their course.
 - b. Demonstrate an understanding of scientific reasoning and the scientific method.
5. Faculty members in the physics department should
 - a. Keep up to date in their fields of expertise.
 - b. Have opportunities and facilities for professional and scholarly activities.

Assessment

Issue: Are our stated goals being met? What evidence do we have to support this?

Majors

1. Track retention between successful completion of PHYS 133 and graduation.
2. GRE Physics scores compared to national norms.
3. Grad schools
4. Immediate job placements
5. Survey of what grads are doing 5-to-10 years after graduation.
6. Matrix showing where some specific goals (computing, communicating) are met in specific courses.
7. Exit poll of graduates
8. List of students engaged in research (and any papers, presentations, etc.) that goes beyond basic senior projects.

Minors

1. Track retention between successful completion of PHYS 133 and graduation.

Service Courses

1. Success/failure rates
2. Occasional use of FCI, FMCE, CSEM, etc.
3. Success rates in some key engineering/architecture/bio classes
4. Better course evaluation to get student feedback
5. A set of “basic competency problems” approved by the department to be given in a few randomly chosen sections each year on the final exam, then committee graded.

GE Courses

1. Better course evaluation to get student feedback

Faculty

1. Tabulations of space and equipment being used for research.
2. Tabulations of faculty professional-development activities.
3. Tabulations of grants, publications, patents, etc.