

APPLIED PHYSICS 2009-10



UNIVERSITY OF CALIFORNIA, SANTA CRUZ

THE APPLIED PHYSICS MAJOR

The applied physics major combines a solid preparation in fundamental physics with courses in an applied area (e.g., applied physics, electrical engineering, biology, or computer science) and an applied senior thesis. It is excellent preparation for students who will have careers in industry upon graduation, as well as for students who will go on to graduate or professional school in physics, engineering, law, medicine, or teaching. The major provides a large number of elective choices. A listing of these is available from the Physical and Biological Sciences Undergraduate Affairs office.

The major difference of the applied physics major from the regular physics major is the emphasis on breadth. Thus the lower division includes a course in chemistry and one in computer science. The upper-division requirements of the applied physics major offer the opportunity to take a wide range of electives, not only in physics, but also in other science disciplines. Faculty are available to discuss career goals and the courses appropriate to the pursuit of those goals.

STUDY AND RESEARCH OPPORTUNITIES

- ◆ B.S.
- ◆ There are many research opportunities for undergraduates both on and off campus.
- ◆ The applied senior thesis offers the opportunity for career-relevant research.

HIGH SCHOOL PREPARATION

High school students wishing to major in applied physics should be prepared to take calculus in their first quarter at UC Santa Cruz so that they can concurrently take the Physics 5 series, calculus-based physics for physics majors. Students should be sure to take high-school chemistry. High-school physics is strongly recommended but not required.

TRANSFER PREPARATION

Transfer students can best prepare by taking courses equivalent to the lower-division requirements for the applied physics major. A course in chemistry and one in computer science is also advisable. Due to the prerequisite structure for upper-division courses, it is necessary for prospective transfer students to have completed all, or as many of the lower-division requirements for the major as possible to complete the degree within a reasonable time. In addition, transfer students must complete courses equivalent to the Physics 5 series, calculus-based physics for physics majors, with a GPA of 2.7 or higher before they will be permitted to enter a physics major, effective with Catalog year 2009-10. This will not necessarily affect physics transfer students entering fall 2009, since they can elect Catalog rights up to three years previous to their enrollment.

The Intersegmental General Education Transfer Curriculum (IGETC) will not provide transfer students with enough mathematics and science courses to allow them to complete the program at UC Santa Cruz in two years. Prospective transfer students should visit the Physical and Biological Sciences Undergraduate Affairs web site at undergrad.pbsci.ucsc.edu for further information (see the *For More Information* section). In addition, please see the *Lower-Division Requirements* section.

LOWER-DIVISION REQUIREMENTS

The required lower-division courses for the applied physics major are normally completed during the first two years at UC Santa Cruz:

- Physics 5A/L, *Introduction to Physics I with Laboratory*
- Physics 5B/M, *Introduction to Physics II with Laboratory*
- Physics 5C/N, *Introduction to Physics III with Laboratory*
- Physics 5D, *Heat, Thermodynamics, and Kinetics*
- Mathematics 19A-B, *Calculus for Science, Engineering, and Mathematics* (two quarters), or Mathematics 20A-B, *Honors Calculus* (two quarters)
- Mathematics 23A-B, *Multivariable Calculus* (two quarters)
- Chemistry 1A, *General Chemistry*
- Computer Science 5C, *Introduction to Programming in C/C++*

CAREERS

The applied physics major is an ideal preparation for entry into almost any technical industry or graduate school. Applied physics majors will often go to work with the title of engineer. However, their broader background than that of a typical engineer will both allow them to adapt readily to changing technology and provide them with many of the tools needed to advance. Careers beyond physics and engineering open to the applied physics major include, among many others, biophysics, geophysics, computer science, law, and medicine. The major is also excellent preparation for teaching when accompanied by the required credentials or advanced degrees.

ACADEMIC ADVISING

Academic advising is available from Physical and Biological Sciences Undergraduate Affairs. Undergraduate Affairs publishes the web site undergrad.pbsci.ucsc.edu, which contains detailed information about the degree programs, sample schedules, transferring credit, placement exams, faculty research, and opportunities in the Physical and Biological Sciences majors.

FOR MORE INFORMATION

For further information about the applied physics major, see:

reg.ucsc.edu/catalog/html/programs_courses/physPS.html

Information about the applied physics major can be found at: undergrad.pbsci.ucsc.edu/programs/physics or by e-mailing physicsadvising@ucsc.edu.

For specific information regarding Physics Department faculty and research, please visit the department web site at: physics.ucsc.edu.

If you have other questions, contact:

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