

Doctor of Philosophy in Applied Physics

Program Goals

- Prepare graduates to conduct and disseminate independent scholarly research in applied physics.
- Prepare graduates for careers in academia, industry, or government.

Program Objectives

- Increase the knowledge of graduates in their chosen field of applied physics.
- Enhance the ability of graduates to contribute to their chosen field of applied physics.
- Enhance effective written and oral communication skills of graduates.

The Ph.D. program in Applied Physics is an interdisciplinary program offered by that allows for a broad range of research topics. Areas of emphasis in the department include: nuclear physics applications, radiation effects in materials, accelerator physics and applications, materials science, homeland security applications, and other areas of applied nuclear science.

To attain a degree in this program, a student must demonstrate scholarly achievement and ability for independent investigation. The program will normally require approximately five years of full-time study beyond the bachelor's degree (or three years beyond the master's degree), including class work, research, and preparation of the dissertation.

Admission Requirements

All applicants must meet Idaho State University Graduate School admission requirements for doctoral programs. In addition, applicants must have attained a minimum of a bachelor's degree in physics or a closely related field (engineering, applied physics, chemistry, etc.). The student's course of study will be determined by consultation with the department chair or the department's graduate advising committee. Students may be required to complete any missing course material that is required for the B.S. degree in physics at Idaho State University. Continued enrollment in the program is contingent upon maintaining a 3.0 grade point average and upon making satisfactory progress toward the degree.

A complete graduate application for classified status in the Idaho State University Physics Department Ph.D. program consists of:

1. GRE scores (normally, a minimum of 50th percentile on verbal, quantitative, or analytical is required for classified students);
2. An Idaho State University Graduate School application form, fee, and official copies of transcripts;
3. Three letters of recommendation;
4. A resume or CV; and
5. A statement of career goals.

General Requirements

The Ph.D. degree requires completion of at least 84 credits at the 500-course or greater. Of these, at least 32 credits, but no more than 44 credits, must be doctoral dissertation credits (PHYS 8850 (<http://coursecat.isu.edu/search/?P=PHYS%208850>) Doctoral Dissertation). At least 4 must be graduate seminar (or equivalent, as determined by the department). The remaining required credits consist of electives and the required courses listed below. Students entering the program with a master's degree may receive credit for up to 30 credits toward the Ph.D., subject to the department chair's approval. Students should complete

the required courses as listed below (or their equivalent, as determined by the department) at Idaho State University.

Required Courses

Code	Title	Credits
Physics (or equivalent at other institution)		
PHYS 5525	Nuclear and Particle Physics I	3
PHYS 5526	Nuclear and Particle Physics II	3
PHYS 6602	Theoretical Methods of Physics	3
PHYS 6611	Electricity and Magnetism	3
PHYS 6621	Classical Mechanics	3
PHYS 6624	Quantum Mechanics	3

Program of Study

A departmental advisory committee consisting of graduate faculty will guide each student in establishing his or her program of course and laboratory study based upon the student's background and research interest. The advisory committee has the responsibility of ensuring that the student has adequate knowledge to support research in his or her area of research.

At the beginning of a full-time student's second year, the student will sit for a written Qualifying Examination. Exceptions to this schedule may be made when a student has academic deficits to make up, in which case the student will have an additional year. The student may take the exam as often as it is offered, but the student must pass the exam by the end of their second year of enrollment. The student will be admitted to candidacy upon passing the qualifying examination.

A dissertation committee of four departmental members and a Graduate Faculty Representative (GFR), chaired by the candidate's major professor, must be appointed within six months of passing the qualifying examination. Within one year of passing the qualifying exam, the full-time candidate, with guidance from the major professor, must satisfactorily complete the Preliminary Examination, which consists of an oral presentation and defense of a written proposal for dissertation research to the student's dissertation committee.

The research and dissertation preparation must be done under the close supervision of the committee and must include at least one full year of work performed under the supervision of a Idaho State University graduate faculty.

Dissertation Examination approval requires a public presentation of the dissertation and a satisfactory oral defense to the dissertation committee. Doctoral oral examinations are open to all regular members of the graduate faculty as observers. Further, oral presentations are open to the public until questioning by the dissertation committee begins.

Doctor of Philosophy in Engineering and Applied Science

A doctoral program in Engineering and Applied Science, administered through the College of Science and Engineering, is available to Physics students. The complete program description is provided in the Engineering and Applied Science (<https://coursecat.isu.edu/graduate/scienceengineering/engineeringandappliedscience/>) section of the Graduate Catalog.