

# Doctor of Philosophy in Engineering and Applied Science (Physics)

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This interdisciplinary Ph.D. program in Engineering and Applied Science (EAS) is open to students in the Departments of Civil and Environmental Engineering, Mechanical Engineering, Electrical and Computer Engineering, Computer Science, Chemistry, Geosciences, Mathematics and Statistics, and Physics.

## Concentration Options

The EAS program offers the following concentration (specialized field) options:

- # Civil Engineering
- # Electrical and Computer Engineering
- # Environmental Engineering
- # Measurement & Control Engineering
- # Mechanical Engineering
- # Chemistry
- # Computer Science
- # Environmental Science & Management
- # Geosciences
- # Geographic Information Science
- # Mathematics
- # Applied Mathematics
- # Statistics
- # Physics

The concentration options of Civil Engineering, Environmental Engineering, and Environmental Science & Management are available for students in the Department of Civil and Environmental Engineering. The Electrical and Computer Engineering concentration is available for students in the Department of Electrical and Computer Engineering. The Mechanical Engineering concentration is available for students in the Department of Mechanical Engineering. The Measurement & Control Engineering concentration is available for students in the Department of Mechanical Engineering, the Department of Electrical and Computer Engineering, or closely related fields. The concentrations of Mathematics, Applied Mathematics, and Statistics are available to students in the Department of Mathematics and Statistics. The Geosciences and Geographic Information Science concentrations are available for students in the Department of Geosciences. The concentrations of Chemistry, Computer Science, and Physics are available for students in the Departments of Chemistry, Computer Science, and Physics, respectively.

## Goals

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

## Objectives

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

## Admission Requirements

All applicants must meet Idaho State University Graduate School admission requirements for doctoral programs. Additionally, admission requirements (such

as master's degree, GPA, and GRE) vary depending upon the concentration options. Applicants must submit a one-page statement including research interests and preferred concentration, a one-page statement of career interests, a resume (CV), and at least 3 letters of reference along with their application. These requirements may be waived on a case-by-case basis. Potential applicants should read individual department sections of the Graduate Catalog and websites for departments' requirement variations. The approval of the chair of the major department is required for admission.

## General Requirements

The Ph.D. degree requires completion of at least 84 credits consisting of 30 credits for the M.S. degree, 18 credits of additional course work (at least 50% of the credits should be at 6000 level), 1-4 credits of graduate seminar, and 32-35 credits of dissertation research. Additional dissertation research credits may be required by the student's dissertation committee. If a M.S. degree is not required for admission, see individual concentration requirements.

## Program of Study

An advisory committee consisting of Idaho State University graduate faculty (generally, 2 from the student's parent department and 1 from another relevant department) will be formed for each student upon entry into the program. The committee will guide the student in establishing their program of coursework and laboratory study based on the student's background and research interests. The advisory committee has the responsibility of ensuring that the student has adequate knowledge to support research in his or her chosen area of interest.

After a minimum of 18 credits of Ph.D. coursework, the student will take an 8-hour written, comprehensive qualifying examination covering relevant coursework material within the scope of the chosen concentration area. Following the written examination, an oral examination will be conducted by the student's Advisory Committee. The oral exam will focus primarily on material in the written exam that was not adequately answered. However, the Advisory Committee, at its discretion, may excuse a student from taking the oral examination if the student excels in the written examination. The student will be allowed two attempts to pass the comprehensive qualifying examination, and the second attempt must be within 6 months after the first attempt. The student will be admitted to candidacy only upon passing the comprehensive qualifying examination.

A Dissertation Committee is formed with a minimum of 5 members consisting of a major professor, 3 members from the student's parent department and relevant department, and a Graduate Faculty Representative (GFR). The major professor chairs the dissertation committee. The candidate, with guidance from the major professor, will satisfactorily complete an oral presentation and defense of a proposal for dissertation research to the Dissertation Committee. This proposal defense should be completed within 6 months or according to the department's guidance after passing the comprehensive examination. The research and dissertation preparation must be conducted under the close supervision of the committee and must include at least one full year of work performed under Idaho State University graduate faculty. The candidate can submit the final dissertation any time after six months from the date of acceptance of the research proposal if the candidate meets the requirement of one full year of work. Dissertation 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 faculty as observers. Further, oral presentations are open to the public until questioning by the Dissertation Committee begins.