

# SYSTEMS DESIGN (PH.D.)

<https://ceps.unh.edu/mechanical-engineering/program/phd/systems-engineering>

## Description

The systems design doctoral degree is an interdepartmental program that addresses contemporary engineering and scientific problems that can be solved only through the cooperation of a variety of disciplines. Students in systems design can elect one of two professional directions. The first develops professionals with the technical expertise of a Ph.D. and with the ability to work with and direct groups of people working on large-scale technical projects. The second direction develops engineers with capabilities in the theory and analysis of large-scale complex systems. Concentration in an area of specific individual interest is combined with participation in a larger interdisciplinary project.

## Requirements

### Degree Requirements

Following entrance into the program, a guidance committee is appointed for the student by the dean of the Graduate School upon recommendation of the student's area coordinator. This committee assists the student in outlining a program and may specify individual coursework requirements in addition to those required by the area of specialization. The committee also conducts an annual in-depth review of each student's progress and, following substantial completion of a student's coursework, administers the qualifying examination. This committee is also responsible for administering the language examination and/or research-tool proficiency requirements. Coursework and language requirements should normally be completed by the end of the second year of full-time graduate study and must be completed before the student can be advanced to candidacy. Typically, at least 13 courses beyond the Bachelor of Science degree are required.

Upon the successful completion of the qualifying examination and other proficiency requirements, the student is advanced to candidacy and, upon the recommendation of the student's area coordinator, a doctoral committee is appointed by the dean of the Graduate School. The doctoral committee conducts an annual review of the student's progress, supervises, and approves the doctoral dissertation, and administers the final dissertation defense.

To obtain a Ph.D. degree, a student must meet all of the general requirements as stated under academic regulations and degree requirements of the Graduate School. Students are normally expected to take coursework equivalent to two full-time academic years beyond the baccalaureate and to complete a dissertation on original technical research that will require at least one additional year of full-time study.

## Student Learning Outcomes

- Ability to think critically and creatively in defining research questions and to outline strategies of inquiry.
- Ability to combine the knowledge and skills across multiple disciplines to solve a complex and/or large-scale problem.
- Ability to document research outcomes comprehensively for publication.
- Ability to communicate research results to scientific audience in conferences.
- Ability to work collaboratively with other peers.
- A deep understanding of at least one core area within CEPS.
- A broader understanding of at least 1 other area of CEPS (within the same department or another department) or another college that is/are different from the core area of research and that is/are necessary to complete the student's multi-disciplinary research.