Comparing the D.Eng. and Ph.D. | Systems Engineering

The Doctor of Philosophy (Ph.D.) and Doctor of Engineering (D.Eng.) programs in the Systems Engineering Department at Colorado State University are both advanced degrees that equip students with cutting-edge research abilities and skills.

This information sheet provides an overview of the main similarities and differences between the programs. Please reach out to the department (sys_engr_info@engr.colostate.edu) with any additional questions you have.

Ph.D. and D.Eng. | Similarities



STUDENT BACKGROUND

Students in both the Ph.D. and D.Eng. programs are usually mid- to late-career, although the Ph.D. program also has students who are earlier in their career. **Important note:** The D.Eng. has a minimum experience requirement of 5-8 years in a technical/engineering role, depending on if a technical master's degree has been completed.



FUNDING

Many of the students in the Ph.D. and D.Eng. programs receive funding support from their employer. This is often received through a tuition reimbursement program. Doctoral students are eligible for other forms of funding support through CSU, federal aid, and other third-party organizations. Funding eligibility sometimes depends on whether students are on-campus or online.



PROGRAM LOGISTICS

Both doctoral programs require a qualification process, preliminary exams, final exam (dissertation defense), and the completion of a rigorous dissertation document. The D.Eng. program timeline is based on an applied research practicum, while the Ph.D. is based on an academic research process.



CAN BE COMPLETED 100% ONLINE

Both the Ph.D. and D.Eng. programs are set up to be completed either on-campus or online. There are no campus visits or residency requirements, though some fully online students do choose to come to campus to work with faculty or to complete their preliminary or final exams.



TIME TO GRADUATION

Both programs have similar required credit numbers and publication expectations. It is very common for students in both programs to be enrolled part-time. Average time to graduation for a part-time doctoral student is 4-5 years, though this varies by student. Both degrees grant students the title of "Doctor."

Important Note: Transferring between the Ph.D. and D.Eng. programs is not permitted.





Ph.D. and D.Eng. | Differences

Ph.D.

Must secure faculty research advisor at CSU before applying. Applications are evaluated on rolling basis up until the application deadline.

There is no minimum experience requirement. Ph.D. students may start their program with minimal or no industry experience.

Employer is optionally involved in degree program; many Ph.D. students do work in industry and complete applied research.

Extensive systems engineering coursework options to tailor exactly to a student's research area.

Research advisors provide primary guidance for the Ph.D. program. Timing, schedules, and criteria are determined by both the student and advisor.

Applied Systems

Engineering

Research

Systems

Engineering

Practice

Ph.D.

Theory-based

Systems

Research

Numerous job opportunities including becoming a faculty member in academia or continuing on in industry.

A more widely recognized doctoral degree that demonstrates students know how to perform academic research.

VS

APPLICATION PROCESS

D.Eng.

Must secure industry practicum sponsor within practicum organization before applying. Applications are only evaluated after the application deadline.

MINIMUM
EXPERIENCE
REQUIREMENT

Minimum experience of 5 years in a technical/ engineering role with a relevant master's and 8 years without a master's.

INDUSTRY INVOLVEMENT

Requires ongoing industry involvement in the form of the student maintaining both a practicum site and practicum sponsor.

COURSEWORK

Coursework is more structured and focused on applied and professional skills. All new D.Eng. students take SYSE 710: Leadership/Innovation in Systems Engineering during their first Fall semester.

ADVISING

D.Eng. students consult with their faculty advisor, practicum sponsor, and committee members to determine degree progression.

RESEARCH ACTIVITIES

Theory-based Systems Research Applied Systems Engineering Research Systems Engineering Practice

D.Eng.

JOB OPPORTUNITIES Many D.Eng. graduates continue on in industry in leadership positions. D.Eng. graduates interested in a job in academia will be most qualified for a "Professor of Practice" position.

DEGREE RECOGNITION The D.Eng. is intended to demonstrate that students can lead organizations with an systems engineering focus to solve R&D applied problems.

