Overview

Become part of a community of engineering professionals exploring the frontier of modern research, pushing the boundaries in the field of systems engineering, and solving issues faced by your current employer, when you begin your Ph.D. in systems engineering online with Colorado State University. Designed for senior management and top-level executives, our highly selective systems engineering Ph.D. program only accepts a handful of students each semester to maintain the integrity and quality of the student experience.

You’ll study with faculty who bring decades of experience in applying academic research to real-world situations, and are conducting cutting-edge research of their own that will help write the textbooks of tomorrow. Watch as Dr. Ron Sega, director of systems engineering graduate programs at CSU, shares what that looks like for his classroom.

The online program offers the advantage of synchronous or asynchronous delivery, allowing you the flexibility to study when and where it works best for your situation with options like:

- Online while the lecture is happening live on campus
- Watching a recorded version sometime after work or on the weekend
- Attending a selection of courses in person at the Fort Collins campus or our South Metro Denver location

In consultation with your advisory committee, you’ll individually structure the program to fit your academic and research goals. Your Ph.D. experience culminates in a dissertation which serves to heighten research and knowledge in your area of interest, and demonstrates a solid foundation of systems engineering theory and practice, as well as a multi-disciplinary understanding of systems concepts.

Delivery

Online; select courses have in-person attendance options

Credits

72 credits

Tuition

$1,035 per credit
Financial aid and military discount are available

Time Frame

Varies based on intensity of study and previous coursework

Degree Awarded

Doctor of Philosophy in Systems Engineering

Offered By

The College of Engineering

Learn More

online.colostate.edu/degrees/systems-engineering-phd

Transforming today’s electric power system into an intelligent network capable of generating, distributing, and consuming power anywhere within the system based on clean energy sources, real-time information, and market-driven transactions is a daunting engineering task. Colorado State University’s Systems Engineering program addresses the challenges of designing and building such complex engineered systems.

Dr. Sunil Cherian
President and CEO, Spirae, Inc.
Curriculum

Core courses
- Students with applicable master level degree – select 18 credits
- Students without applicable master level degree – select 21 credits
  • CIS 600 – Information Technology and Project Management (3 cr.)
  OR
  • CIS 670 – Advanced IT Project Management (3 cr.)
  OR
  • MECH 501 – Engineering Project Management and Program Management (3 cr.)
  • ENGR 501 – Foundations of Systems Engineering (3 cr.)
  • ENGR 530 – Overview of Systems Engineering Processes (3 cr.)
  • ENGR 531 – Engineering Risk Analysis (3 cr.)
  • ENGR 565 – Electrical Power Engineering (3 cr.)
  • ECE 566 – Energy Conversion for Electrical Power Systems (3 cr.)
  • ENGR 567 – Systems Engineering Architecture – Systems Engineering Architecture (3 cr.)
  • ECE 568 – Electrical Energy Generation Systems (3 cr.)
  • ECE 621 – Energy Storage for Electrical Power Systems (3 cr.)
  • ECE 622 – Energy Networks and Power Distribution Grids (3 cr.)
  • ENGR 510 – Engineering Optimization: Methods and Applications (3 cr.)
  • ENGR 520 – Engineering Decision Support/Expert Systems (3 cr.)
  • MECH 513 – Simulation Modeling and Experimentation (3 cr.)
  • ENGR 532 – Dynamics of Complex Engineering Systems (3 cr.)

Technical Electives
- Students with applicable master level degree – no technical electives required.
- Students without applicable master level degree – a maximum of 6 credit hours at the 400 level is permitted. The remaining credits must be at the 500 level or above.

Dissertation
- Students with applicable master level degree – 24 credits
- Students without applicable master level degree – 33 credits
  • ENGR 799 – Dissertation (1-18 cr.)

Dissertation credits can be completed throughout multiple semesters.

Minimum Admission Requirements
- B.S. degree from a regionally-accredited institution in engineering, mathematics, or a science discipline with a GPA of 3.0 or greater
- Calculus III (MATH 261 Calculus for Physical Scientists III or equivalent)
- Basic Statistics (STAT 301 or equivalent)
- GRE test scores are required if all previous degrees were conferred by an institution outside of the U.S
- A faculty advisor must be secured before admittance. It is also the responsibility of applicants to establish rapport with faculty in a professional manner once all application materials have been submitted.

Completion Requirements
- A minimum of 72 credits must be completed
- Ph.D. – 42 credits needed (applicable master’s earned with at least 30 credits)
  • 18 course credits required
  • Dissertation (24 cr.)
- Ph.D. – 72 credits needed (no applicable master level degree earned)
  • 39 course credits required
  • Dissertation (33 cr.)

Students who have completed their Ph.D. research, while enrolled at CSU, and have submitted at least two full papers for publication in peer-reviewed journals or conference proceedings, may fill out an Independent Study Form (listing citations and validating documentation), and have the form approved by their Ph.D. faculty advisor. You must be first author on at least one of the papers submitted for publication. After this form is submitted to and approved by the department, three credits of the 18 or 39 required will be reflected in an independent study course (ECE 795) in place of three course-specific credits.