

DOCTOR OF ENGINEERING IN SYSTEMS ENGINEERING

The Doctor of Engineering in Systems Engineering degree is intended for working professionals and includes core studies in complex systems engineering and its applications to complex systems in a working environment. The curriculum includes professional and applied/translational courses, a systems engineering practicum, and a dissertation to assist working professionals in attaining a higher level of value for their organizations.

Learning Objectives

1. Use systems engineering thinking and frameworks to effectively design, analyze, and implement integrated system solutions.
2. Demonstrate an applied mastery of the systems engineering technical domain including systems design, computation, modeling, analysis, and systems science.
3. Demonstrate an applied mastery of the systems engineering management domain including lifecycle processes, stakeholder management, leadership, and enterprise engineering.
4. Achieve a level of understanding which will contribute to the advancement of the systems engineering enterprise and profession.

Requirements Effective Fall 2025

Code	Title	Credits
Core Courses:		
SYSE 501	Foundations of Systems Engineering	3
SYSE 530	Overview of Systems Engineering Processes	3
ENGR 502	Engineering Project and Program Management	3
or CIS 600A	Project Management: Information Technology	
or CIS 670	Advanced IT Project Management	
ENGR 531	Engineering Risk Analysis	3
SYSE 710	Leadership/Innovation in Systems Engineering ¹	3
Courses in Depth – Select 21 credits:		21
ECE 566	Grid Integration of Wind Energy Systems	
ENGR 510	Engineering Optimization: Method/ Application	
ENGR 520	Intelligent Decision Support Systems	
ENGR 525	Intellectual Property and Invention Systems	
ENGR 533	Spaceflight and Biological Systems	
ENGR 535	Modeling Human Systems Behavior	
ENGR 540	Design Analysis of Engineering Experiments	
ENGR 546	AR/VR Biometrics and Sensing for Training	
ENGR 565/ ECE 565	Electrical Power Engineering	
ENGR 570	Coupled Electromechanical Systems	
MECH 513	Simulation Modeling and Experimentation	
SYSE 505	Systems Thinking for the Real World	

SYSE 511	Control Engineering for System Engineers
SYSE 512	Systems Sensing and Imaging Analysis
SYSE 532/ ECE 532	Dynamics of Complex Engineering Systems
SYSE 534	Human Systems Integration
SYSE 536	Space Mission Analysis and Design
SYSE 541	Engineering Data Design and Visualization
SYSE 544	Systems-Based AR/VR Environmental Realism
SYSE 545	Augmented/Virtual Reality Systems Development
SYSE 548	Security Engineering for Systems Engineers
SYSE 549	Secure Vehicle and Industrial Networking
SYSE 555	Transitions in Energy Systems
SYSE 567	Systems Engineering Architecture
SYSE 569	Cybersecurity Awareness for Systems Engineers
SYSE 571	Analytics in Systems Engineering
SYSE 573	Cost Optimization for Systems Engineers
SYSE 602	Systems Requirements Engineering
SYSE 603	Introduction to Systems Test and Evaluation
SYSE 667	Advanced Model-Based Systems Engineering

Applied Electives – Select at least 3 credits:		3
BUS 500	Foundations for Business Impact	
BUS 601	Quantitative Business Analysis	
CIS 570	Business Intelligence	
CIS 575	Applied Data Mining and Analytics in Business	

Professional Electives – Select at least 3 credits:		3
BUS 620	Leadership and Teams	
BUS 630	Information Management	
CIS 676	Information Technology Management	
PSY 647	Applied Industrial Psychology	
PSY 648	Applied Organizational Psychology	
SYSE 711	Ethics in Systems Engineering	

Technical Electives ²		12
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Applied Practicum		
SYSE 786	Applied Systems Engineering Practicum	9

Dissertation		
SYSE 799B	Dissertation: Professional Doctorate	9

Program Total Credits:		72
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A minimum of 72 credits are required to complete this program. Up to 30 credits of an applicable master's degree may be used toward Core, Technical Elective, and Courses in Depth requirements.

¹ SYSE 710 must be taken in the student's first year.

² Select technical elective credits with approval by student's advisor. SE Department maintains an extensive list of possible suggested electives, or new courses may be approved on an individual basis.

A maximum of 6 credit hours are permitted at the 400-level. The remainder must be at the 500-level or above.

Requirements for All Graduate Degrees

For more information, please visit Requirements for All Graduate Degrees (<https://catalog.colostate.edu/general-catalog/graduate-bulletin/graduate-study/procedures-requirements-all-degrees/>) in the Graduate and Professional Bulletin (<https://catalog.colostate.edu/general-catalog/graduate-bulletin/>).

Summary of Procedures for the Master's and Doctoral Degrees

NOTE: Each semester the Graduate School publishes a schedule of deadlines. Deadlines are available on the Graduate School website (<https://graduateschool.colostate.edu/deadline-dates/>). Students should consult this schedule whenever they approach important steps in their careers.

Forms (<https://graduateschool.colostate.edu/forms/>) are available online.

Step	Due Date
1. Application for admission (online)	Six months before first registration
2. Diagnostic examination when required	Before first registration
3. Appointment of advisor	Before first registration
4. Selection of graduate committee	Before the time of fourth regular semester registration
5. Filing of program of study (GS Form 6)	Before the time of fourth regular semester registration
6. Preliminary examination (Ph.D. and PD)	Two terms prior to final examination
7. Report of preliminary examination (GS Form 16) - (Ph.D. and PD)	Within two working days after results are known
8. Changes in committee (GS Form 9A)	When change is made
9. Application for Graduation (GS Form 25)	Refer to published deadlines from the Graduate School Website
9a. Reapplication for Graduation (online)	Failure to graduate requires Reapplication for Graduation (online) for the next time term for which you are applying
10. Submit thesis or dissertation to committee	At least two weeks prior to the examination or at the discretion of the graduate committee
11. Final examination	Refer to published deadlines from the Graduate School Website
12. Report of final examination (GS Form 24)	Within two working days after results are known; refer to published deadlines from the Graduate School website

13. Submit a signed Thesis/ Dissertation Submission Form (GS Form 30) to the Graduate School and Submit the Survey of Earned Doctorates (Ph.D. only) prior to submitting the electronic thesis/ dissertation	Refer to published deadlines from the Graduate School website.
14. Submit the thesis/dissertation electronically	Refer to published deadlines from the Graduate School website
15. Graduation	Ceremony information is available from the Graduate School website