

# MASTER OF ENGINEERING, PLAN C, SYSTEMS ENGINEERING SPECIALIZATION

## Learning Objectives

Upon successful completion, students will be able to:

1. Use systems engineering thinking and frameworks to effectively design, analyze, and implement integrated systems solutions.
2. Effectively use applied Systems Engineering tools such as modeling and simulation of a system (including digital twinning), risk analysis, or other skills required for systems engineering professional roles.
3. Analyze systems interfaces between stakeholder, technical domains effectively and efficiently.
4. Exemplify a variety of roles in multi-disciplinary teams including systems engineer, technical expert, and leader.

## Requirements Effective Fall 2024

Code	Title	Credits
<b>Core Courses</b>		
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 501	Foundations of Systems Engineering	3
SYSE 530	Overview of Systems Engineering Processes	3
<b>Courses in Depth</b>		
Select three courses from the following:		9
ECE 566	Grid Integration of Wind Energy Systems	
ENGR 510	Engineering Optimization: Method/Application	
ENGR 520	Engineering Decision Support/Expert 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 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 512	Systems Sensing and Imaging Analysis	
SYSE 532/ ECE 532	Dynamics of Complex Engineering Systems	

SYSE 534	Human Systems Integration	
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 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	
<b>Group Study</b>		
SYSE 695	Independent Study <sup>1</sup>	3
<b>Electives</b>		
Electives <sup>2</sup>		6
<b>Program Total Credits:</b>		<b>30</b>

A minimum of 30 credits are required to complete this program.

<sup>1</sup> Complete 3 credits of SYSE 695 or select a comparable 3 credit course with approval of graduate advisor.

<sup>2</sup> 400-level or above regular course credits consistent with the student's program of study.

NOTE: One course cannot satisfy multiple requirements.

## Requirements for All Graduate Degrees

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