PH.D. IN PHYSICS

Students earning a Ph.D. in Physics advance the start-of-the-art in the field through research---experimental, theoretical, and/or computational---in areas such as condensed matter physics, atomic physics, and particle physics. Coursework is offered to ensure that students have an appropriate level of foundational knowledge.

Graduates of this program are well prepared for careers in fundamental and applied physics research, higher education, and a wide range of industries that can take advantage of the technical, communication, and leadership skills our students develop.

Students interested in graduate work should refer to the Graduate and Professional Bulletin (https://catalog.colostate.edu/general-catalog/graduate-bulletin/).

Learning Objectives

Upon successful completion of this program, students will be able to:

1. Articulate the relevant principles of classical mechanics, statistical mechanics, electromagnetism, and quantum mechanics in the context of important model systems and real systems, at the level expected of graduate students.
2. Apply advanced problem-solving skills using analytical and numerical methods as appropriate at the graduate level.
3. Appreciate the current state of knowledge in areas of physics both within and outside their area of specialization.
4. Carry out original research in physics.
5. Use written communication and oral presentation skills to share research results with the scientific community.

Requirements Effective Fall 2026

Students are required to maintain the department's requirements for normal progress (https://www.physics.colostate.edu/normal-progress/). Any course substitutions, waivers, or transfer credits must be approved by the departmental Graduate Advisory Committee.

Code	Title	Credits
Core Courses [1]		21
PH 571	Mathematical Methods for Physics I	
PH 621	Classical Mechanics	
PH 641	Electromagnetism I	
PH 642	Electromagnetism II	
PH 651	Quantum Mechanics I	
PH 652	Quantum Mechanics II	
PH 671	Statistical Mechanics	
Seminar		4
PH 692	Seminar [2]	
Physics Electives [3]		9
DSCI 550/PH 550	Computational Physical Statistics	
PH 521	Introduction to Lasers	
PH 522	Introductory Laser Laboratory	
PH 531	Introductory Condensed Matter Physics	
PH 561	Elementary Particle Physics	
PH 721	Advanced Atomic, Molecular, Optical Physics	
PH 731	Condensed Matter Theory	
PH 762	Elementary Particle Theory	
PH 770	Quantum Theory	
Non-classroom courses		8-38
PH 693	Current Topics in Physics Research	
PH 698	Research	
PH 699	Thesis	
PH 784	Supervised College Teaching	
PH 795	Independent Study	
PH 799	Dissertation	
Other courses [4]		0-15
ATS 3XX-7XX		
CHEM 3XX-7XX		
CS 3XX-7XX		
DSCI 3XX-5XX		
ECE 3XX-7XX		
GRAD 3XX-7XX		
MATH 3XX-7XX		
MECH 3XX-7XX		
MSE 3XX-7XX		
PH 3XX-7XX		
STAR 3XX-7XX		
STAT 3XX-7XX		
Master's Degree Credit [5]		0-30
Program Total		**72**

A minimum of 72 credits are required to complete this program.

[1] A 3.0 GPA is required for the Core Courses.
[2] This is a 1-credit course, which must be taken at least 4 times.
[3] At least 3 credits at the 600- or 700- level, and at least 3 credits in a subject outside the student's primary area of research. Any substitutions in this category must be approved by the student's advisor and the Graduate Advisory Committee.
[4] With approval of the student's advisor.
[5] Up to 30 credits may be accepted from a prior Master's degree.

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