Physics, PHD

Modality

On Campus

Program URL

https://physics.georgetown.edu/graduate/

The Physics Department is a vibrant community of faculty, students, and staff committed to Georgetown's mission as a student-centered research university. The academic programs feature close student-faculty interactions and include the novel Industrial Leadership in Physics track for doctoral students. Faculty-led research groups work in areas such as Biological Physics, Hard Condensed Matter, Micro and Nano Technologies, Optics and Imaging, Physics Education, Soft Condensed Matter, Statistical Physics and Ultracord Gases, sponsored by grants from government agencies such as the National Science Foundation, the Air Force Office of Scientific Research, and the Department of Energy.

Academic Policies

The academic policies and procedures of the Physics program are those specified in Georgetown University's Bulletin and the department handbook.

Requirements

Program Requirements

To earn a Ph.D. in Physics, students must complete the following requirements:

- 34 credits of coursework
- Participate in the Integrative Experience after the first two semesters of coursework
- Complete 3 lab rotations
- Receive a final grade of B or better in each first-year core course OR pass a comprehensive examination
- Pass the Qualifying Examination
- Research, write, and defend a dissertation.

Students are also expected to submit an Annual Progress Report by September 15 detailing their work over the previous year. Review of these reports serves as a means for determining satisfactory academic progress within the program.

Students select one of two tracks in which to study: Standard Physics Track or the Industrial Leadership Track. The requirements for each track are outlined below.

Required Examinations

Comprehensive Examination

Students who receive a final grade of B or better in each of their first-year core courses will not be required to take a comprehensive examination. Students who do not meet these conditions will be required to pass an exam based on the core course where the final grade was below B.

Students who are not required to take the exam will begin lab rotations in early June, right after the end of first-year coursework.

Qualifying Examination

The Qualifying Examination is a written report and an oral presentation that address research progress to date and present the proposed thesis/dissertation project. While there are not length requirements for the examination, most written reports are 15-20 pages.

For the oral portion of the exam, the student should prepare a 30-minute presentation. Following the presentation, the committee members will ask questions that prove the depth and breadth of the student's knowledge of the broader research field.

Thesis Requirements

A least 6 weeks before the Qualifying Examination, students must submit their Thesis/Dissertation Proposal Form. Each member of the Thesis Committee, as well as the Director of Graduate Studies, must approve the form before it is submitted to the Graduate Program Coordinator, who will make a copy for departmental records and submit the original form to the Graduate School.

Any revisions to the Thesis Proposal Form reflecting feedback from the Thesis Committee should be submitted to the DGS within two weeks after the Qualifying Examination.

Once the dissertation proposal is approved, students may begin research and writing. Upon completion of the dissertation, students must deliver a public 30-minute oral presentation open to the academic community and answer questions from attendees. During the private phase of the review, the Thesis Committee will ask the candidate additional questions.

Passing the Dissertation Defense requires approval of all or all but one of the committee members.

Plan of Study

Standard Physics Track

Course	Title	Credits
Fall I		
PHYS 6000	Colloquium: Physics	1.5
PHYS 5001	Quantum Mechanics I	3
PHYS 5301	Statistical Mechanics	3
PHYS 5601	Electricity & Magnetism	3
Integrated Experience		
	Credits	**10.5**
Spring I		
PHYS 6000	Colloquium: Physics	1.5
PHYS 5002	Quantum Mechanics II	3
PHYS 5401	Computational Techniques	4
PHYS 5501	Solid State Physics I	3
Integrated Experience		
	Credits	**11.5**
Summer		
Comprehensive Examination (if applicable)		
1 Physics Lab Rotation (if taking the Comprehensive Examination)		

2 Physics Lab Rotations (not taking the Comprehensive Examination)		
	Credits	**0**
Fall II		
2-3 Electives selected from an approved list		
Physics Lab Rotation		
	Credits	**0**
Spring II		
1-2 Electives from an approved list		
Thesis Research [1]		
	Credits	**0**
	Total Credits	**22**

[1] Once all coursework is completed, Ph.D. students register for Thesis Research until the point of graduation.

Industrial Leadership Track

Course	Title	Credits
Fall I		
PHYS 6000	Colloquium: Physics	1.5
PHYS 5001	Quantum Mechanics I	3
PHYS 5301	Statistical Mechanics	3
PHYS 5601	Electricity & Magnetism	3
Integrated Experience		
	Credits	**10.5**
Spring I		
PHYS 6000	Colloquium: Physics	1.5
PHYS 5002	Quantum Mechanics II	3
PHYS 5401	Computational Techniques	4
PHYS 5501	Solid State Physics I	3
Integrated Experience		
	Credits	**11.5**
Summer		
Comprehensive Examination (if applicable)		
1 Physics Lab Rotation (if taking the Comprehensive Examination)		
2 Physics Lab Rotations (not taking the Comprehensive Examination)		
	Credits	**0**
Fall II		
1-2 Electives from an approved list		
One Business/Finance course from an approved list		
Physics Lab Rotation		
	Credits	**0**
Spring II		
1-2 Electives from an approved list		
1-2 Electives from an approved list 1 Business/Finance course from an approved list		
Thesis Research [1]		
	Credits	**0**
	Total Credits	**22**

[1] Once all coursework is completed, Ph.D. students register for Thesis Research until the point of graduation.