

MASTER OF SCIENCE IN THE FIELD OF PHYSICS (STEM)

The Department of Physics is part of the natural, mathematical, and biomedical sciences discipline in the Columbian College of Arts and Sciences. Graduate students in physics gain knowledge of advanced physics concepts, including advanced mechanics, electromagnetic theory, advanced quantum mechanics, and statistical mechanics, along with mathematical methods in physics and computational physics.

Additional courses in quantum field theory, solid-state physics, nuclear physics, astrophysics, and biophysics are offered. An integral part of the program involves students in active and frontier research. For students interested in experimental, observational, and applied physics, our association with national and international laboratories allows hands-on training and original research.

The department maintains research affiliations and collaborations with researchers at the National Institute of Standards and Technology, U.S. Naval Research Laboratory, Thomas Jefferson National Accelerator Facility, and NASA. It also has ties with international research institutions. Concentrations include nuclear physics and astrophysics and condensed-matter physics as well as interdisciplinary studies in materials science and biophysics.

Please note that normally only partial tuition awards are awarded for the MS Physics program.

This is a STEM designated program.

Visit the program website (<https://physics.columbian.gwu.edu/ms-physics/>) for additional information.

ADMISSIONS

Admission deadlines: Fall - February 1: Priority consideration for admission and funding; April 1: Guaranteed review for admission and consideration for funding, if available. (Applications for admission will continue to be accepted after April 1, when space remains available in the program.)

Spring – October 1

Standardized test scores: GRE general test not required; GRE subject test recommended (institutional code 5246). The Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the PTE Academic is required of all applicants except those who hold a bachelor's, master's, or doctoral degree from a college or university in the United States or from an institution located in a country in which English is the official language, provided English was the language of instruction.

Minimum scores for the program are:

- Academic IELTS: an overall band score of 6.0 with no individual score below 5.0; or

- TOEFL: 550 on paper-based or 80 on Internet-based; or

- PTE Academic: 53

Applicants to the Master's program who do not meet minimum English language requirements may be eligible for our full-time Applied English Language program.

Recommendations (2) recommendations required:

Prior academic records: Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended must be uploaded to your online application. Official transcripts are required only of applicants who are offered admission. If transcripts are in a language other than English, English language translations must be provided. The English translation alone should be uploaded into your application.

Statement of purpose: In an essay of 250 – 500 words, state your purpose in undertaking graduate study in your chosen field. Include your academic objectives, research interests, and career plans. Also discuss your related qualifications, including collegiate, professional, and community activities, and any other substantial accomplishments not already mentioned on the application. If you are applying for an assistantship or fellowship, you should also describe any teaching experience you have had.

International applicants only: Please review International Applicant Information (<https://columbian.gwu.edu/international-graduate-applicants> (<https://columbian.gwu.edu/international-graduate-applicants/>)) carefully for details on required documents, earlier deadlines for applicants requiring an I-20 or DS-2019 from GW, and English language requirements.

Supporting documents not submitted online should be mailed to:

Columbian College of Arts and Sciences, Office of Graduate Studies
The George Washington University
801 22nd Street NW, Phillips Hall 107
Washington DC 20052

For additional information about the admissions process visit the Columbian College of Arts and Sciences Frequently Asked Questions (<https://columbian.gwu.edu/graduate-admissions-faq/>) page.

Contact:

askccas@gwu.edu
202-994-6210 (phone)

Hours: 9:00 am to 5:00 pm, Monday through Friday

REQUIREMENTS

Prerequisite: a bachelor’s degree with a major in physics at this University, or an equivalent degree.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<https://bulletin.gwu.edu/arts-sciences/#degreeregulationstext>).

36 credits. For non-thesis option—24 credits in required courses and 12 credits in elective courses. For thesis option—24 credits in required courses, including 6 credits in thesis, and 6 credits in elective courses.

Code	Title	Credits
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Required

PHYS 6110	Mathematical Methods of Theoretical Physics	
PHYS 6120	Advanced Mechanics	
PHYS 6130	Computational Physics I	
PHYS 6210	Electrodynamics and Classical Field Theory	
PHYS 6220	Quantum Mechanics I	
PHYS 6230	Computational Physics II	
PHYS 6310	Statistical Mechanics	
PHYS 6330	Computational Physics III	
PHYS 6590	Seminar	

For thesis option:

PHYS 6999	Thesis Research	
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Electives

Non-thesis students select 12 credits and thesis students select 6 credits in the following elective courses:

PHYS 6320	Quantum Mechanics II	
PHYS 6510	Communications in Physics	
PHYS 6599	Advanced Study	
PHYS 6610	Nuclear and Particle Physics I	
PHYS 6620	Biophysics I	
PHYS 6630	Radiative Processes in Astrophysics	
PHYS 6710	Nuclear and Particle Physics II	
PHYS 6720	Biophysics II	

PHYS 6730	High-Energy Astrophysics
PHYS 6810	Applied Statistics and Data Analysis in Physics
DATS 6202	Machine Learning I: Algorithm Analysis