MASTER OF SCIENCE IN THE FIELD OF PHYSICS

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 degree program.

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

ADMISSIONS

Admission deadlines:
- Fall – April 1 (February 1 for applicants applying for assistantships/fellowships)
- Spring – October 1

Standardized 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) 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 (http://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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 6110</td>
<td>Mathematical Methods of Theoretical Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS 6120</td>
<td>Advanced Mechanics</td>
<td></td>
</tr>
<tr>
<td>PHYS 6130</td>
<td>Computational Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 6210</td>
<td>Electrodynamics and Classical Field Theory</td>
<td></td>
</tr>
<tr>
<td>PHYS 6220</td>
<td>Quantum Mechanics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 6230</td>
<td>Computational Physics II</td>
<td></td>
</tr>
<tr>
<td>PHYS 6310</td>
<td>Statistical Mechanics</td>
<td></td>
</tr>
<tr>
<td>PHYS 6330</td>
<td>Computational Physics III</td>
<td></td>
</tr>
<tr>
<td>PHYS 6590</td>
<td>Seminar</td>
<td></td>
</tr>
<tr>
<td><strong>For thesis option:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 6999</td>
<td>Thesis Research</td>
<td></td>
</tr>
<tr>
<td><strong>Electives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-thesis students select 12 credits and thesis students select 6 credits in the following elective courses:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 6320</td>
<td>Quantum Mechanics II</td>
<td></td>
</tr>
<tr>
<td>PHYS 6510</td>
<td>Communications in Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS 6599</td>
<td>Advanced Study</td>
<td></td>
</tr>
<tr>
<td>PHYS 6610</td>
<td>Nuclear and Particle Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 6620</td>
<td>Biophysics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 6630</td>
<td>Radiative Processes in Astrophysics</td>
<td></td>
</tr>
<tr>
<td>PHYS 6710</td>
<td>Nuclear and Particle Physics II</td>
<td></td>
</tr>
<tr>
<td>PHYS 6720</td>
<td>Biophysics II</td>
<td></td>
</tr>
</tbody>
</table>