PHYSICS (PH.D.)

Admission Requirements

Admission to this program is contingent upon admission to the Graduate School (http://bulletins.wayne.edu/graduate/general-information/admission). In addition, applicants must satisfy the following criteria.

Prerequisite preparation should include:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 2170</td>
<td>University Physics for Scientists I</td>
<td></td>
</tr>
<tr>
<td>PHY 2180</td>
<td>University Physics for Scientists II</td>
<td></td>
</tr>
<tr>
<td>PHY 3300</td>
<td>Introductory Modern Physics</td>
<td></td>
</tr>
</tbody>
</table>

Fifteen credits in intermediate physics courses, for example, those equivalent to the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 5100</td>
<td>Methods of Theoretical Physics I</td>
<td></td>
</tr>
<tr>
<td>PHY 5200</td>
<td>Classical Mechanics I</td>
<td></td>
</tr>
<tr>
<td>PHY 5210</td>
<td>Classical Mechanics II</td>
<td></td>
</tr>
<tr>
<td>PHY 5340</td>
<td>Optics</td>
<td></td>
</tr>
<tr>
<td>PHY 5400</td>
<td>Quantum Physics I</td>
<td></td>
</tr>
<tr>
<td>PHY 6400</td>
<td>Thermodynamics and Statistical Physics</td>
<td></td>
</tr>
<tr>
<td>PHY 6410</td>
<td>Electromagnetic Fields I</td>
<td></td>
</tr>
<tr>
<td>PHY 6500</td>
<td>Electromagnetic Fields II</td>
<td></td>
</tr>
<tr>
<td>PHY 6600</td>
<td>Modern Physics Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

Mathematics equivalent to mathematics prerequisites required in those physics courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 1220</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHM 1230</td>
<td>and General Chemistry I Laboratory (or equivalent courses)</td>
<td></td>
</tr>
</tbody>
</table>

The Graduate Record Examination, both the General section and the Physics subject test, is strongly recommended as a counseling aid in preparing the student’s plan of study.

Academic Scholarship:

All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations) and the College of Liberal Arts and Sciences (http://bulletins.wayne.edu/graduate/college-liberal-arts-sciences/academic-regulations).

Candidates for the doctoral degree must complete ninety credits beyond the baccalaureate, including thirty credits of dissertation research. Students must demonstrate proficiency in the fields of: mechanics, electromagnetic theory, quantum physics, and thermodynamics and statistical mechanics.

Course work:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 7110</td>
<td>Methods of Theoretical Physics II</td>
<td></td>
</tr>
<tr>
<td>PHY 7400</td>
<td>Quantum Mechanics I</td>
<td></td>
</tr>
<tr>
<td>PHY 7500</td>
<td>Statistical Mechanics</td>
<td></td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 7050</td>
<td>Survey of Condensed Matter Physics</td>
</tr>
</tbody>
</table>

In general, it is recommended that students take all the advanced courses in their specialty. Students specializing in any branch of theoretical physics are encouraged to take the quantum theory of fields, or a related directed study. On petition of the student and his/her dissertation advisor, the Departmental Graduate Committee may waive any of the above course requirements.

Ph.D. Qualifying Examination:

This will normally be taken after the student has completed approximately one year of graduate course work. Its purpose is to investigate the student’s knowledge of physics and capacity for creative thought. This is a written examination. The student must submit a Plan of Work prior to taking this examination.

Physics Colloquium (PHY 8995):

It is required that all full-time graduate students register for and attend the Departmental Physics Colloquium each semester they are in residence.

Dissertation:

An approved dissertation is required. The thirty credit dissertation registration requirement is fulfilled by registering for the courses PHY 9991, PHY 9992, PHY 9993, and PHY 9994 (Doctoral Dissertation Research and Direction I, II, III, and IV, respectively), in consecutive academic year semesters.

Academic Scholarship:

All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations) and the College of Liberal Arts and Sciences (http://bulletins.wayne.edu/graduate/college-liberal-arts-sciences/academic-regulations).