## Physics (PhD)

### Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background Coursework</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>PY 781</td>
<td>Quantum Mechanics I</td>
<td></td>
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<tr>
<td><strong>Core Courses</strong></td>
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<td>12</td>
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<tr>
<td>Select four PY 700-level courses approved in conjunction with the academic committee</td>
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<tr>
<td><strong>Qualifying Exams</strong></td>
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<tr>
<td>PY 721</td>
<td>Statistical Physics I</td>
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</tr>
<tr>
<td>PY 782</td>
<td>Quantum Mechanics II</td>
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<tr>
<td>PY 783</td>
<td>Advanced Classical Mechanics I</td>
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<tr>
<td>PY 785</td>
<td>Advanced Electricity and Magnetism I</td>
<td></td>
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<tr>
<td><strong>Elective Courses</strong></td>
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<td>12</td>
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<tr>
<td>“Elective Courses” may include PY 500-level and 700-level courses, physics-related courses in other departments, or courses required for a minor</td>
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<tr>
<td><strong>Additional Courses</strong></td>
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<td><strong>Research Courses</strong></td>
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<tr>
<td>PY 890</td>
<td>Doctoral Preliminary Examination</td>
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<tr>
<td>PY 895</td>
<td>Doctoral Dissertation Research ¹²</td>
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<tr>
<td><strong>Dissertation</strong></td>
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<tr>
<td>PY 899</td>
<td>Doctoral Dissertation Preparation</td>
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<tr>
<td><strong>Total Hours</strong></td>
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<td>72</td>
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</tbody>
</table>

¹ Excludes PY 781 & PY 785, but may include: PY 721 Statistical Physics I, PY 782 Quantum Mechanics II, PY 783 Advanced Classical Mechanics I.

² 42 credit hours of research are required for a PhD; however, only 24 are required for students with a MS.

### Faculty

#### Full Professors
- Harald Ade
- David E. Aspnes
- Robert J. Beichner
- Jerzy Bernholc
- John Michael Blondin
- John D. Brown
- Laura I. Clarke
- Karen E. Daniels
- William L. Ditto
- Daniel B. Dougherty
- Carla Frohlich
- Robert Golub
- Kenan Gundogdu
- Hans D. Hallen
- Paul R. Huffman
- Chueng Ryong Ji
- James P. Kneller
- Gail C. McLaughlin
- Lubos Mitas
- Jagdish Narayan
- Robert Riehn
- Christopher M. Roland
- Maria C. Sagui
- Thomas M. Schaefer
- John E. Thomas
- Mithat Unsal
- Keith R. Weninger
- Albert R. Young

#### Associate Professors
- Matthew Piron Green
- Alexander Kemper
- Divine Philip Kumah
- Shuang Fang Lim
- Richard Leigh Longland
- Hong Wang

#### Assistant Professors
- Julio Monti Belmonte
Rongmon Bordoloi
Mary Williard Elting
Sebastian Konig
Sharonda Leblanc
Katherine Jean Mack
Vladimir Skokov
Dali Sun

Practice/Research/Teaching Professors
Jason Russell Bochinski
Kazimierz Borkowski
Abay Dinku
Brand Irving Fortner
Keith Heyward
Parminder Kaur
John H. Kelley
Hayen Leendert
Kent Leung
Wenchang Lu
Vijaya Mehta
Zodiac T. Webster

Emeritus Faculty
Ruth W. Chabay
Kwong T. Chung
James W. Cook Jr.
Stephen R. Cotanch
William Robert Davis
Donald C. Ellison
Raymond Earl Fornes
Christopher Robert Gould
David G. Haase
Karen L. Johnston
Fred Lado Jr.
Jacqueline Krim
Gary E. Mitchell