

# PHYSICS - PH.D.

## College of Arts and Sciences

Department of Physics  
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Kent Campus  
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## Description

The Ph.D. degree in Physics provides training of professionals to conduct independently conceived programs of research or teaching in universities or research laboratories. Original research is required in fundamental or applied areas of physics, and the Ph.D. dissertation must be orally defended. Two years of graduate coursework, plus four years of research are typical.

## Fully Offered At:

- Kent Campus

## Admission Requirements

- Bachelor's degree or higher from an accredited college or university for unconditional admission
- Minimum 3.000 GPA on a 4.000 point scale for unconditional admission
- Official transcript(s)
- GRE (general) scores<sup>1</sup>
- Résumé or vita
- Goal statement
- Three letters of recommendation
- English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning one of the following:
  - Minimum 550 TOEFL PBT score (paper-based version)
  - Minimum 79 TOEFL IBT score (Internet-based version)
  - Minimum 77 MELAB score
  - Minimum 6.5 IELTS score
  - Minimum 58 PTE score

For more information about graduate admissions, please visit the Graduate Studies admission website. For more information on international admission, visit the Office of Global Education's admission website.

<sup>1</sup> A physics subject GRE score is highly recommended to ensure an application for the Ph.D. degree is competitive.

## Program Learning Outcomes

Graduates of these programs will be able to:

1. Demonstrate cognitive skills important to a physicist, including the following:
  - a. Think critically and analytically;
  - b. Define and solve problems in physics; and

- c. Perform research in contemporary areas of physics research at the highest level and with a great deal of independence.
2. Demonstrate a core knowledge and understanding of the foundations of physics.
  3. Communicate results of their work to peers, to various target groups within the physics community and to people outside the discipline.

## Program Requirements

### Major Requirements

Code	Title	Credit Hours
<b>Major Requirements</b> <sup>1</sup>		
PHY 75204	CLASSICAL ELECTRODYNAMICS II	3
PHY 75301	STATISTICAL MECHANICS I	4
PHY 76162	QUANTUM MECHANICS II	3
PHY 76163	QUANTUM MECHANICS III	3
PHY 76201	PARTICLE PHYSICS	3
PHY 76303	APPLICATIONS OF QUANTUM CHROMODYNAMICS	3
or PHY 76403	ADVANCED CONDENSED MATTER PHYSICS	
or PHY 78401	LIQUID CRYSTAL PHYSICS	
PHY 76401	SOLID STATE PHYSICS I	3
PHY 80199	DISSERTATION I <sup>2</sup>	30
Additional Program Requirements <sup>3</sup>		8-38
<b>Minimum Total Credit Hours for Post-Baccalaureate Students</b>		90
<b>Minimum Total Credit Hours for Post-Master's Students</b>		60

- <sup>1</sup> Students may petition to substitute a specific course if a minimum B grade was earned for a course at another school that is judged to be equivalent. The required physics courses will prepare the student for the candidacy examination.
- <sup>2</sup> Upon admission to candidacy, each student must register for PHY 80199 for a total of 30 credit hours. Thereafter, students should register for PHY 80299 continuously each term until all degree requirements have been met. The dissertation must present and interpret original research. Topics available for dissertation research are primarily in the areas of condensed matter physics, material science, biophysics, theoretical astrophysics and high-energy nuclear physics. Students present at least one seminar based on their dissertation research during their graduate career.
- <sup>3</sup> Additional program requirements are selected in consultation with the student's faculty advisor and approved by the department.