GRADUATE PROGRAM IN APPLIED PHYSICS

2022 Overview

Northwestern
Northwestern Applied Physics

Affiliation: 2 Schools and 7 Departments

WEINBERG COLLEGE OF ARTS & SCIENCES & MCCORMICK SCHOOL OF ENGINEERING

- Physics & Astronomy
- Chemistry
- Earth & Planetary Sciences

Northwestern Applied Physics

- Materials Science
- Electrical and Computer Engineering
- Biomedical Engineering

Engineering Sciences and Applied Mathematics
Northwestern
Applied Physics

Program Team

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Why become an AP student at NU?

#1
We need you:
your skills and talent, your unique ideas and perspective

#2
Unique Research Opportunities
- interdisciplinary, multiple departments
- many faculty members (experiment, theory)
- new QIS centers

#3
Start your own research early (second quarter!)
interact with AP students and faculty doing research in a variety of disciplines
Applying to NU Applied Physics: Timeline

12/15/22
Applications will receive priority review

12/31/22
Application deadline

holistic review of applications

First admission decisions and offer letters to accepted students

Offers starting late Jan. 2023

04/15/2023
Prospective student decision deadline
Applying to NU Applied Physics: Application

Content of your application

- statement of purpose
- diversity statement (optional)
- transcripts
- holistic review
- 3 recommendation letters
- [GRE / GRE Physics] (Both optional but recommended for GRE Physics*)

*For applications submitted in 2021 for fall 2022 enrollment
Tell your story!
The admissions committee and faculty want to get to know you.

Why Applied Physics?

What inspires you? What drives you? What makes you different?

Mention faculty you might be interested in working with.

If applicable, mention any research experience.

Mention obstacles you faced, and how you managed to overcome them. Resilience and determination are strengths!
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Applied Physics

Program Components & Goals

**Components:**
- **Components & Goals:** enable you to become an independent researcher.
- **Provide you with a solid foundation in physics.**
- **Prepare you for and assist you in planning and realizing your career plans.**

**Goals:**
- Provide you with a solid foundation in physics.
- Prepare you for and assist you in planning and realizing your career plans.
Northwestern
Applied Physics

PhD Timeline:
5-year program

10 required classes

Research

1
Spring Yr 1
Oral Qualifying Exam

2

3
Spring Yr 3
Thesis Proposal

4

5
PhD Defense

Yr 2 - 4
Teaching Assistantship

Yr 3 - 5
AP Research Seminar
Professional Development

- Career Exploration
- Leadership and Management
- Speaking and Presenting
- Teaching
- Writing and Research
~ 50 faculty members in:
- Biomedical Engineering
- Chemistry
- Earth and Planetary Sciences
- Electrical and Computer Engineering
- Engineering Sciences and Applied Mathematics
- Materials Science and Engineering
- Physics and Astronomy

* As of Oct. 2022
## Northwestern Applied Physics

**Courses**

### First Year

<table>
<thead>
<tr>
<th>Fall</th>
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| MAT SCI 401: Chemical & Statistical Thermodynamics of Materials  
or PHYS 416: Introduction to Statistical Mechanics (Winter Yr1) |
| PHYS 412-1: Quantum Mechanics                               |
| PHYS 411-1: Methods of Theoretical Physics                  |
| GEN ENG 519: Responsible Conduct of Research Training       |

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<thead>
<tr>
<th>Winter</th>
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<tbody>
<tr>
<td>PHYS 412-2: Quantum Mechanics</td>
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<tr>
<td>PHYS 414-1: Electrodynamics</td>
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<tr>
<td>PHYS 416-0: Introduction to Statistical Mechanics</td>
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<tr>
<td>or MAT SCI 401: Chemical &amp; Statistical Thermodynamics of Materials (Fall Yr1)</td>
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<th>Spring</th>
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<tr>
<td>MAT SCI 405: Physics of Solids</td>
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<td>or PHYS 422-1: Condensed Matter Physics (Fall Yr2)</td>
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### Second Year or later

<table>
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<tr>
<td>PHYS 422-1: Condensed Matter Physics</td>
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<tr>
<td>or MAT SCI 405: Physics of Solids (Spring Yr1)</td>
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<tr>
<td>Computational Methods of Applied Physics</td>
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<tr>
<td>Experimental Methods of Applied Physics</td>
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<td>2 Electives</td>
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Start your own research

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Graduate Students

*As of Sept. 2022*
As of Sept. 2022
Where do our Alumni work?

- ACADEMIA
- NATIONAL LABS
- INDUSTRY
- FINANCE
Where do our Alumni work?
Examples

- Argonne National Laboratory
- UCLA
- Intel
- BCG
- Dupont Nutrition & Biosciences
- Cornell University
- Citigroup
- Goldman Sachs
- SLAC National Accelerator Laboratory
- Stanford University
- ETH Zürich
- NIST (National Institute of Standards and Technology)
- The University of Chicago
City of Evanston
- Population of ~75,000.
- Convenient, quiet.
- Quick and easy connections to downtown Chicago. (Metra: ~20 mins)

City of Chicago
- Population of 2.7M
- Great museums, restaurants, sports, culture,...
- And beaches!