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

Engineering Sciences and Applied Mathematics

Materials Science
Electrical and Computer Engineering
Biomedical Engineering
Your contacts

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Vinh San Dinh, Student Council
VinhDinh2024@u.northwestern.edu

Gamze Gul, Student Council
GamzeGul2024@u.northwestern.edu

Lawrence Rhoads, Student Council
LawrenceRhoads2025@u.northwestern.edu

Madison Schwinn, Student Council
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Northwestern Applied Physics

Core Disciplines

- Applied Quantum Physics
- Interface Science
- Soft Condensed Matter
- Magnetism
- Structure and Self-Organization of Biological Molecules
- Mineral Physics
- Photonics
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

12/15/21
Applications will receive priority review

12/31/21
Application deadline

holistic review of applications

First admission decisions and offer letters to accepted students

Offers starting late Jan. 2022

04/15/2022
Prospective student decision deadline
Applying to NU Applied Physics: Application

Content of your application

- **Statement of purpose**
- **Diversity statement (optional)**
- **Transcripts**
- **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!
Program
Components & Goals

- enable you to become an independent researcher
- prepare you for and assist you in planning and realizing your career plans
- provide you with a solid foundation in physics

Northwestern
Applied Physics
Northwestern
Applied Physics

PhD Timeline:
5-year program

10 required classes

Research

1
2
3
4
5

Spring Yr 1
Oral Qualifying Exam

Yr 2 - 4
Teaching Assistantship

Spring Yr 3
Thesis Proposal

PhD Defense

Yr 3 - 5
AP Research Seminar
Northwestern Applied Physics

The Graduate School at Northwestern University (TGS) offers a variety of resources and programming to contribute to the professional development of our graduate students and postdoctoral fellows.

In addition to providing direct services (such as workshops and speakers), TGS serves as a gateway to programming and resources across campus. TGS partners with several University offices to provide skill acquisition in five major Core Competencies. In addition, students are encouraged to explore the Career Pathways, where professional development opportunities and resources are organized by career path, in a timeline format. Finally, TGS offers

- Career Exploration
- Leadership and Management
- Speaking and Presenting
- Teaching
- Writing and Research
Northwestern
Applied Physics

Applied Physics Faculty

~ 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

<table>
<thead>
<tr>
<th>First Year</th>
<th>Second Year or later</th>
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<tbody>
<tr>
<td><strong>Fall</strong></td>
<td><strong>Fall</strong></td>
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</table>
| MAT SCI 401: Chemical & Statistical Thermodynamics of Materials  
or PHYS 416: Introduction to Statistical Mechanics (Winter Yr1) | PHYS 422-1: Condensed Matter Physics  
or MAT SCI 405: Physics of Solids (Spring Yr1) |
| PHYS 412-1: Quantum Mechanics      |                                          |
| PHYS 411-1: Methods of Theoretical Physics |                                          |
| GEN ENG 519: Responsible Conduct of Research Training |                                          |
| **Winter**                         |                                          |
| PHYS 412-2: Quantum Mechanics      |                                          |
| PHYS 414-1: Electrodynamics        |                                          |
| PHYS 416-0: Introduction to Statistical Mechanics  
or MAT SCI 401: Chemical & Statistical Thermodynamics of Materials (Fall Yr1) |                                          |
| **Spring**                         |                                          |
| MAT SCI 405: Physics of Solids     |                                          |
| or PHYS 422-1: Condensed Matter Physics (Fall Yr2) |                                          |

2 Electives

Start your own research
<table>
<thead>
<tr>
<th>Name</th>
<th>Group</th>
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</thead>
<tbody>
<tr>
<td>Aziz Abogoda</td>
<td>Sauls group</td>
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<tr>
<td>Tse-Min Chiang</td>
<td>Schatz group</td>
</tr>
<tr>
<td>Annaliese Ehlen</td>
<td>Overa de la Cruz group</td>
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<tr>
<td>Huanbo Jiang</td>
<td>Odom, T. group</td>
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<tr>
<td>Jovan Nelson</td>
<td>Stern group</td>
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<tr>
<td>Rohan Rajmohan</td>
<td>First year student</td>
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<tr>
<td>Banibrato Sinha</td>
<td>Khalili group</td>
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<tr>
<td>Emmanuel Aneke</td>
<td>First year student</td>
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<tr>
<td>Ting Ching Chu</td>
<td>Lauhon group</td>
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<tr>
<td>Matthew Farnese</td>
<td>First year student</td>
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<tr>
<td>Samira Khan</td>
<td>First year student</td>
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<tr>
<td>Anirudh Ramesh</td>
<td>Kumar group</td>
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<td>Jovan Nelson</td>
<td>Stern group</td>
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<tr>
<td>Lucas Stanley</td>
<td>First year student</td>
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<tr>
<td>Mauricio Angelone</td>
<td>Jacobsen group</td>
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<tr>
<td>Christopher Cravey</td>
<td>First year student</td>
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<td>Samira Khan</td>
<td>First year student</td>
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<tr>
<td>Jennifer Garland</td>
<td>Petford-Long group</td>
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<tr>
<td>Wing-Shun Li</td>
<td>Backman / Dravid group</td>
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<tr>
<td>Jasmine Panthee</td>
<td>First year student</td>
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<tr>
<td>Lawrence Rhoads</td>
<td>Grayson group</td>
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<tr>
<td>Yi Wang</td>
<td>Odom, T. group</td>
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<td>Sevde Nur Arpaci</td>
<td>Khalili group</td>
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<tr>
<td>Gregor Dairaghi</td>
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<td>Benjamin Roter</td>
<td>Jacobsen group</td>
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<td>Jacobsen group</td>
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<tr>
<td>Yiping Wang</td>
<td>Kovachy group</td>
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<tr>
<td>Vin San Dinh</td>
<td>Koch / Romanenko group</td>
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<td>Gamze Gul</td>
<td>Kumar group</td>
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<td>Kara Hokenstad</td>
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<td>Arthur McCray</td>
<td>Petford-Long group</td>
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<td>Margaret Quinn</td>
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<td>Madison Schiavon</td>
<td>Chen group</td>
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<td>Joseph Yaker</td>
<td>Koch / Romanenko group</td>
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<td>Matthew Capocci</td>
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<td>Ely Eastman</td>
<td>Kumar group</td>
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<tr>
<td>Swan Htun</td>
<td>Jacobsen group</td>
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<td>Ennis Mawas</td>
<td>First year student</td>
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<tr>
<td>Alexander Tyner</td>
<td>Goswami group</td>
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<tr>
<td>Antara Sen</td>
<td>First year student</td>
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<tr>
<td>Andre Vallieres</td>
<td>First year student</td>
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**Statistics**

**By Citizenship**
- International: 48%
- USA: 52%

**By Gender**
- Male: 64%
- Female: 36%

**By Department**
- MSE/BME: 3%
- Chemistry: 17%
- MSE: 20%
- ECE: 23%
- P&A: 37%

*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
- Citi
- BCG
- Dupont Nutrition & Biosciences
- SLAC National Accelerator Laboratory
- ETH Zürich
- Stanford University
- 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!