GRADUATE PROGRAM IN APPLIED PHYSICS

2023 Overview

Northwestern
Northwestern
Applied Physics

Affiliation:
2 Schools and 9 Departments

WEINBERG COLLEGE
OF ARTS & SCIENCES

&

McCORMICK SCHOOL OF
ENGINEERING

Biomedical Engineering
Chemistry
Computer Science
Earth & Planetary Sciences

Northwestern
Applied Physics

Physics & Astronomy
Materials Science
Mechanical Engineering
Engineering Sciences and Applied Mathematics

Northwestern
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Core Disciplines

Northwestern
Applied Physics

- 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?

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

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

**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

12/15/23 Applications will receive priority review

12/31/23 Application deadline

12/31/23 Holistic review of applications

First admission decisions and offer letters to accepted students

Offers starting late Jan. 2024

04/15/2024 Prospective student decision deadline
**Applying to NU Applied Physics: Application**

**Content of your application**

- Academic statement
- Personal statement
- 3 recommendation letters
- Transcripts
- Holistic review

**Optional**

- Additional information statement
- [GRE / GRE Physics]
  - Not required for applications submitted in 2023 for fall 2024 enrollment
- 60s video
  - To introduce yourself and briefly describe your research, career interests and why Northwestern

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*Northwestern*
Applying to NU Applied Physics: Statement of Purpose

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

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  2  3  4  5

Spring Yr 1
Oral Qualifying Exam

Spring Yr 3
Thesis Proposal

PhD Defense

Yr 2 - 4
Teaching Assistantship

Yr 3 - 5
AP Research Seminar
• Career Exploration
• Leadership and Management
• Speaking and Presenting
• Teaching
• Writing and Research
Northwestern
Applied Physics Faculty

~ 50 faculty members in:
- Biomedical Engineering
- Chemistry
- Computer Science
- Earth and Planetary Sciences
- Electrical and Computer Engineering
- Engineering Sciences and Applied Mathematics
- Materials Science and Engineering
- Mechanical Engineering
- Physics and Astronomy

* As of Sept. 2023
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<th><strong>Fall</strong></th>
<th><strong>Second Year or later</strong></th>
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| **MAT SCI 401**: Chemical & Statistical Thermodynamics of Materials  
  or **PHYS 416**: Introduction to Statistical Mechanics (Winter Yr1) | **Fall** |
| **PHYS 412-1**: Quantum Mechanics | **PHYS 422-1**: Condensed Matter Physics  
  or **MAT SCI 405**: Physics of Solids (Spring Yr1) |
| **PHYS 411-1**: Methods of Theoretical Physics | **Fall or later** |
| **GEN ENG 519**: Responsible Conduct of Research Training | **Computational Methods of Applied Physics**  
  **Experimental Methods of Applied Physics**  
  2 Electives |

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<td><strong>PHYS 412-2</strong>: Quantum Mechanics</td>
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<td><strong>PHYS 414-1</strong>: Electrodynamics</td>
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| **PHYS 416-0**: Introduction to Statistical Mechanics  
  or **MAT SCI 401**: Chemical & Statistical Thermodynamics of Materials  
  (Fall Yr1) |  |

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| **MAT SCI 405**: Physics of Solids  
  or **PHYS 422-1**: Condensed Matter Physics (Fall Yr2) |  |
Graduate Students

* As of Sept. 2023
As of Sept. 2023

Northwestern
Applied Physics

Statistics
AP Students

BY CITIZENSHIP
TOTAL: 48 STUDENTS

USA: 50%
International: 50%

BY GENDER
TOTAL: 48 STUDENTS

Male: 69%
Female: 31%

BY ADVISOR’S MAIN DEPARTMENT
TOTAL: 42 STUDENTS
(6 HAVE NOT CHOSEN AN ADVISOR YET)

P&A: 41%
ECE: 14%
MSE: 24%
Chem: 17%
MSE/BME: 2%
MSE/CS: 2%
Where do our Alumni work?

- ACADEMIA
- NATIONAL LABS
- INDUSTRY
- FINANCE
Northwestern
Applied Physics

Where do our Alumni work?
Examples

- Argonne National Laboratory
- UCLA
- Intel
- BCG
- Dupont Nutrition & Biosciences
- Goldman Sachs
- SLAC National Accelerator Laboratory
- Cornell University
- Stanford University
- ETH Zürich
- NIST
- 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!