GRADUATE PROGRAM IN APPLIED PHYSICS

Overview
Affiliation:
2 Schools and 6 Departments
Program Team

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Lincoln Lauhon
McCormick Co-Director

Pedram Khalili
Admissions Chair

Jens Koch
Director of Graduate Studies

Clarence Morales
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Core Disciplines

Northwestern

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

- **12/15/20**: Applications will receive priority review
- **12/31/20**: Application deadline
- **holistic review of applications**
- **First admission decisions and offer letters to accepted students**: Offers starting late Jan. 2021
- **04/15/2021**: 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]*

* Not required for applications submitted in 2020 for fall 2021 enrollment
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
PhD Timeline: 5-year program

10 required classes

Research

1. Spring Yr 1
   Oral Qualifying Exam

2. Yr 2 - 4
   Teaching Assistantship

3. Spring Yr 3
   Thesis Proposal

4. Yr 3 - 5
   AP Research Seminar

5. PhD Defense
Professional Development

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

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

* As of Sept. 2020
## Courses

### First Year

**Fall**
- 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

**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)

### Second Year or later

**Fall**
- PHYS 422-1: Condensed Matter Physics
  - or MAT SCI 405: Physics of Solids (Spring Yr1)

**Fall or later**
- Computational Methods of Applied Physics
- Experimental Methods of Applied Physics
- 2 Electives

**Spring**
- MAT SCI 405: Physics of Solids
  - or PHYS 422-1: Condensed Matter Physics (Fall Yr2)
Statistics

As of Sept. 2020

BY CITIZENSHIP
- USA: 44%
- International: 56%

BY GENDER
- Male: 71%
- Female: 29%

BY AFFILIATED DEPARTMENT
- MSE: 36%
- P&A: 36%
- ECE: 14%
- Chemistry: 11%
- Other: 3%
Where do our Alumni work?

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

- Argonne National Laboratory
- UCLA
- Intel
- Citi
- Dupont Nutrition & Biosciences
- Cornell University
- Stanford University
- SLAC National Accelerator Laboratory
- ETH Zürich
- National Institute of Standards and Technology
- The University of Chicago
Beyond Northwestern

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!