Today: “Careers in Physics”

- Announcements
- Dallas Johnson (Engineering Career Services)
- Mentor break out (careers)
Still no iClicker?

Options:
1) Send me an email right after class
2) Log into Zoom during lecture
3) TBA

Reminders:
• Register iClickers!
• Check gradebook

https://courses.physics.illinois.edu/phys110/fa2021/
iClicker Question: What do Illinois Physics Bachelors do with their degrees?

Most (>50%) get a PhD and become professors:

A. True
B. False

• Illinois Physics Bachelors take many career paths
• Career options are extremely flexible
Physics is a flexible degree that gives you a first-principles and fundamental understanding of nature, strong math and analytical skills, and technical expertise... and that will prepare you for many different careers!
The sky's the limit.

In Engineering Career Services, we're committed to producing the best outcomes for our students.

From the minute you step on campus, you can utilize our resources for searching for internships and co-ops, creating résumés and cover letters, and finding your dream job. Additionally, we cultivate strong, lasting relationships with the top companies in engineering in order to pass those networks on to you. The education, experiences, and resources at Grainger Engineering at Illinois will prepare you to hit the ground running upon graduation.

SCHEDULE AN APPOINTMENT

Dallas Johnson
Senior Coordinator
Engineering Career Career Services
dallas1@Illinois.edu
Careers in Physics
ATTENTION PHYSICS STUDENTS: You Have Options

Q: What can you do with a physics degree?
A: Get a PhD and become a physics professor OR ...

What comes after the "OR" is not widely known in many physics departments, even though data show that less than a third of physics bachelor's degree recipients enroll in a physics or astronomy graduate program within one year of graduating. People with undergraduate degrees in physics pursue a variety of fascinating, fulfilling, and well-paying careers. This is evidenced by decades of data collected by the Statistical Research Center at the American Institute of Physics. Illustrated below are the common paths of physics bachelor's recipients based on the most recent data. Unless otherwise indicated, all data are for graduates of U.S. physics programs who remain in the United States.

Over 8,400 physics bachelor's degrees were awarded in the class of 2015–16.

A record high! Typically...

- Three-fourths of those who earn physics bachelor's degrees have research experience.
- One-third graduate with a "double major"—many in math.

Within one year of earning a physics bachelor's degree...

- 50% attend graduate school in physics or astronomy.
  - About 3/4 enroll in a PhD program; the remainder choose a master's degree program.
  - Most are fully supported by teaching assistantships, research assistantships, or fellowships.
  - Of those who start graduate school in physics or astronomy...
  - 50% enter the workforce.
    - Common employment sectors include:
      - Private sector
        - ~2/5 of those who enter the workforce take jobs in the private sector.
        - Of those that enter the private sector, the large majority hold science, technology, engineering, and math (STEM) positions.
        - Those in private-sector STEM positions are well compensated, with a median starting salary of about $70,000.
    - Colleges or universities
      - More than half of the students in these positions were employed at the same institution they graduated from. Many work in research or IT.
    - Civilian government
      - The civilian government sector includes national labs. The vast majority of these positions are in STEM fields, many related to defense or energy.
    - Active military
      - Physics bachelor's degree across all branches of the armed forces. Many work in nuclear power.
  - 20% enroll in graduate programs other than physics or astronomy or in professional degree programs.
    - About half an engineering program; the rest enter programs in math, medicine, education, or another field.
    - As a group, physics majors score among the highest of all majors on medical school and law school admission tests (the MCAT and LSAT).
    - Students in professional degree programs are more likely to be under-funded than students in research-based graduate programs, who usually have teaching assistantships, research assistantships, or fellowships.

Add to the mix: Foreign citizens coming to the United States for a graduate degree, students who earned bachelor's degrees in another field but went on to a graduate degree in physics, and students who earned a physics bachelor's degree in previous academic years.

- 1/2 enter the workforce.
  - About half work in the private sector, virtually all in STEM fields.
  - The largest portion of exiting master's working in the private sector are employed in the field of engineering.
  - Other common employment sectors for exiting master's include colleges and universities, high schools, and civilian government.
  - Most transfer to other institutions to earn a PhD in physics.

- 1/2 continue with graduate studies.
  - Most transfer to other institutions to earn a PhD in physics.
  - Others transfer to programs related fields such as materials science, engineering, medical physics, and mathematics.

- 1/4 of new PhDs accept potentially permanent positions are employed in the private sector.
- The median starting salary for new physics PhDs employed in the private sector is $108,000.

Employment sectors of physics PhDs 10–14 years since receiving their degree.

- 45% Private sector
- 40% Academia
- 6% Government
- 6% Other

1 out of 12 US physics bachelor's receive an exiting physics or astronomy master's degree.

Exiting master's degree recipients are individuals who leave their current department upon receiving a master's degree. Many other students earn an out-of-state master's degree, continuing on to a physics PhD in the same department.

- Over half of those who earn exiting master's degrees do so with a specific research focus.
- A master's degree in physics usually takes about two years

For US citizens, within one year of earning an exiting master's degree...

- 40% accept a potentially permanent position.

Learn more at the Careers Toolbox website:
www.spsnational.org/careerstoolbox

References and Notes:
The following data and graphics published by the Statistical Research Center of the American Institute of Physics are available online at www.aip.org/statistics.

2. AIP Statistical Research Center AIP Physics Trends: Research Experiences of Physics Undergraduates, Fall 2009.
5. AIP Statistical Research Center data from follow-up survey of physics bachelor's, master's, and PhDs, www.aip.org/statistics/employment.

*Estimates provided by the AIP Statistical Research Center, Summer 2014.*
About 50% of Illinois Physics majors enter the workforce after graduation in a wide range of careers and sectors.
Employment Sectors for New Physics Bachelors

- Private sector, STEM: 53%
- Private sector, non-STEM (technical): 9%
- Private sector, non-STEM (non-technical): 7%
- Civilian govt.: 6%
- Active military: 5%
- High school teacher: 4%
- College or University: 3%
- Other: 11%

Field of employment for New Physics Bachelors

Employed in private sectors:

- Engineering: 30%
- Computer or Information Systems: 25%
- Other STEM: 10%
- Physics or Astronomy: 6%
- Non-STEM: Regularly Solves Technical Problems: 5%
- Non-STEM: Rarely or Never Solves Technical Problems: 4%

aip.org/statistics  Spring ‘21  Fall ‘20
# Illinois Physics Majors Post-Graduation

## Private sector (50%, $72.5k)

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<td>Accenture Consulting</td>
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<td>Olenick &amp; Associates</td>
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Typical Starting Salaries for 2020 Bachelor’s Degree Recipients

- Electrical Engineering
- Computer Science
- **Physics**
- Mathematics
- Aerospace Engineering
- Civil Engineering
- Environmental Science
- Chemistry
- Business Administration
- Healthcare Administration
- Accounting
- Biology

Illinois Physics grads

Starting Salary in Thousands

Data adapted from National Association of Colleges and Employers Winter 2020 Survey
iClicker Question: What are your graduation plans?

A. Graduate school in Physics
B. Graduate school in another field
C. Employment in private sector
D. Teaching
E. Not sure!
Graduate School
About 50% of Illinois Physics majors enter a PhD program after graduation... but more diversity in disciplines compared with national average.
Graduate school gateway to:

- Postdoctoral research opportunities
- Higher paying job in industry & national labs
- Job in academia (i.e., becoming a professor)
Illinois Physics Major Post-Graduation

Private sector (50%, $72.5k)

Accenture Consulting
Belvedere Trading
Chicago Tech Academy
CISCO Systems
CreateASoft
Crystal Lake Central HS
Elk Grove HS
Epic
Google
Green Line Engineering
HRL Labs
IBM
IMC Finance
Inservice Engineering
Intel
Jump Trading
JP Morgan Chase
Olenick & Associates
Qualcomm
Simplex Investments
Studio 222
Twitch LLC
U-Line Distributor
U.S. Army Core of Engineers
Viasat
...

Graduate Schools (50%)

Areas

Physics
Applied Physics
Applied Statistics
Architectural Acoustics
Biomedical Engineering
Computer science
Electrical Engineering
Finance
Geophysics
Journalism
Law School
Material Science
Mathematics
Neuroscience
Nuclear Engineering
Secondary Education
...

Institutions

Caltech
Colorado
Cornell
Florida
Harvard
Indiana
Johns Hopkins
Maryland
Michigan
Michigan State
Minnesota
MIT
Northwestern
Notre Dame
Ohio State
Ohio University
Oxford
Penn State
Princeton
Stanford
U Chicago
UIUC
University of California
Virginia
Washington
Wisconsin
...
Resources

Engineering Career Services
https://www.aip.org/career-resources
https://jobs.spsnational.org/jobs/
https://jobs.physicstoday.org/
http://www.physics.org/careerprofiles.asp
https://www.gradschoolshopper.com/gradschool/
Breakout groups

- Discuss career plans, internship/job experiences
- Return to this room in about 15 minutes!